

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

SECTION OF MEDICINE.

SESSION HELD AT PITTSFIELD, JULY 12, 1923.

PSYCHOTHERAPY.

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In the last few years, there has been such a marked and widespread awakening of popular interest in all things mental, particularly in various forms of mental healing, that the prejudice we, as physicians, all feel toward fake cures may well have been excited to a greater degree than ever. Possibly this prejudice may be blocking our appreciation of the importance of legitimate and scientific psychotherapy, and very probably it may be sidetracking what should be our scientific interest in just why and how fake cures accomplish their results.

It is in the hope of combating this possible prejudice against scientific psychotherapy and this probable prejudice against that which may be learned from fake cures, that I venture to present this paper upon a subject so hackneyed.

PSYCHOTHERAPY.

Psychotherapy, as the term implies, means healing through the medium of the patient's mind. Mental healing is the very oldest form of therapy known. Back in the dark ages before the birth of science, nature and all her ways, all the common phenomena of life, must needs have been explained on a supernatural, mystical basis. Small wonder, then, that appeal in the case of illness was made first to the gods or the devils, then commonly believed to control nature by their fickle and changing will. The laying on of hands by the Egyptian priests as described in the Ebers papyrus is perhaps the earliest recorded instance of psychotherapy. The Temple Sleep of the ancient Greeks is a vastly more modern example. The feather-crowned witch doctors of the African jungle, and the medicine men of our North American Indians, are no doubt the present, living exemplars of the prehistoric psychotherapy that preceded in all races the more developed and modern forms as found in the records of ancient Egypt.

As healing became less an art by virtue of becoming more a science, both surgery and medicine became so absorbed in curing and preventing diseases and injuries of the human tissues, that the mental side of illness was thoroughly neglected. But into this vacuum rushed the modern healer, whose prototype was the savage

witch doctor, the Egyptian or Greek priestly healer.

In the meantime psychotherapy as a hardly or reluctantly recognized branch of scientific medicine was developed slowly, separating the effective elements from the nonsense of former times, until we see Bernheim and others of the Nancy School sift out "suggestion" and recognize it as the active healing element in the magic and mystical cures of their own and ancient times. We know now that it is an important element in everyday life, and not only in every sort of unscientific but in all forms of scientific healing, and that it is an essential part of modern psychotherapy.

But until psychology was separated from speculative philosophy and began to be formulated as a science, suggestion alone constituted psychotherapy. Only comparatively lately have psychologists contributed hypotheses that are of practical medical value, so that medical science cannot be blamed for not accepting and using what did not exist. During the last twenty years, however, psychology developed hypotheses of human behavior, formulated the phenomena of emotional states and gave to medicine the fundamental basis upon which scientific psychotherapy could grow and has grown.

Within this space of two decades many hypotheses explaining abnormal states of mind have emanated from the medical world, most of them quite independent of the slowly growing science of psychology, and largely ignoring its contributions. Although some of them have added here and there a little light, such as Charcot's and Janet's conceptions of hysteria, and more lately Freud's introspective psychology, yet as we progress we have to discard much that once seemed plausible, and take with us only that which successfully comes through the acid test of scientific proof.

Slowly, but surely, psychotherapy as a part of medical science is making its way to the front, but even yet the body of medical scientists does not fully appreciate the universality of its application. For still is healing through mental means too often considered applicable only to mental disease. In reality the overwhelming majority of all medical cases are very definitely complicated by a so-called neurosis or a neurotic element, and their need for psychotherapy is so marked that there should be little need for further argument in favor of its being accepted as an absolutely indispensable part of every physician's armamentarium. The physician, be he surgeon or internist, has need of psychological knowledge and of at least rudimentary psychotherapy, in not just a selected few, but every one of his cases. For they are all of them sentient, emotional, intelligent human beings, no matter what disease they may have, and whatever that disease may be, it will be affected

favorably or unfavorably by their mental status. Moreover, whatever the physician's therapy, it will be aided or obstructed by the mental effect that it and he produce upon the patient.

EFFECTIVE AGENTS IN ALL FORMS OF PSYCHOTHERAPY.

There are certain agents operating in every form of psychotherapy which, by observation and experiment, appear to be the active principles, the elements, though often disguised by verbiage and elaboration, which are ultimately responsible for the effects, be they cures or alleviations, wrought upon the patients.

Suggestion.—In the first place there is suggestion. We mean by this term, the process of gaining the patient's acceptance of an idea without bringing it into contact with his critical faculties. This uncritical acceptance of ideas on the part of a patient depends directly upon the degree of inherent suggestibility which he may possess, and this in its turn seems to vary inversely with his knowledge of the subject to which any given idea is related. It is present to some degree in all normal people, varying in different individuals from the marked suggestibility of the hysterics to almost its disappearing point in the imbecile. It varies at different ages in the same individual, being more marked in children than adults. In most individuals it may be increased or decreased by changes in their immediate emotional or physical condition.

Direct Suggestion with Hypnosis.—One method of increasing suggestibility, which depends for its success upon the degree of its presence, is hypnosis. Here a trance-like condition is produced in which the patient accepts directly and uncritically the ideas presented, and suggestions of ameliorations or disappearance of symptoms often reach realization.

Direct Suggestion without Hypnosis.—Without first thus lulling the critical faculties to sleep, direct suggestion is of little use. To make an assertion that improvement will occur sometime in the future has some value as a direct suggestion, for it may not be contrary to the patient's knowledge or belief. But such assertion will have greater effect as an indirect suggestion by manifesting to the patient the physician's belief that such will be the outcome, and, provided he has confidence in the latter's experience and judgment, the patient will feel confidence in his prediction. If, on the contrary, the assertion be made that the patient is better, that amelioration has already appeared—when it has not—this direct suggestion combats the patient's knowledge and belief, and stands little chance of acceptance.

However, it is interesting to note that often a suggestion which, when offered by another, is

discarded as absurd, may, nevertheless, be more acceptable and often distinctly effective if the patient himself makes the statement to himself. This is the grain of truth at the bottom of the numerous systems of auto-suggestion. But, as in direct suggestion from others, here, too, the effect depends first on the degree of suggestibility possessed and, secondly, on the probability of the truth of the suggestion as compared to the knowledge or belief of the patient.

Indirect Suggestion.—Indirect suggestion is the most useful and most used form of suggestion, and is, of course, used without hypnosis. The suggestion is effective in eluding the critical faculty and fixed beliefs against cure, by its very indirection, its tact. Direct suggestion under hypnosis is comparable to the quickly produced, but short-lived, passive immunity of an anti-toxine, whereas indirect suggestion is analogous to the more lasting, active immunity produced by vaccinations.

This form of suggestion is used consciously and advertently or unconsciously and inadvertently by every type of healer, orthodox or otherwise, in all cases of all kinds of disease and disorder. Interpretation and conclusion on the part of the patient are the sensitive processes through which the helpful and encouraging ideas and beliefs reach his acceptance. The healer's belief in the power of his prayers or his medicaments is the source of the patient's belief—his words, his incantations, or his draughts are the indirect agents only. No physician can prescribe a dose of medicine, outline a régime or order a course of treatment, let alone administer the medicine, give the treatment himself, or make an examination or a diagnosis without using or abusing this powerful, ever-active agent. For not only scientific knowledge of the patient's disease, but sympathetic understanding of his suffering, are the very basis upon which encouragement grows and hope of recovery or relief is born. Important as this obviously is in all cases, it is often neglected by the "busy physician," only to be appreciated and used to the full by the quack.

Education.—Education is the modern and the most useful form of psychotherapy which in its application utilizes as adjuvants the other elements just mentioned.

It uses primarily the patient's intelligence. Its object is to give him knowledge of his difficulty, of his own assets and liabilities, and finally to teach him how to adjust himself to these difficulties. In the psychoneurotic, education aims at realization by the patient of his own fundamental normality, in spite of functional disorder; whereas, in the organically crippled, it aims at revaluation of symptoms on the basis of their actual significance and at development of such abilities as would minimize the handicap. Its method is that of teaching the patient to think both of himself and his

difficulties objectively, practically and effectively, so that he may be successful in his adaptations to his world as it actually exists.

Obviously this method is particularly useful in dealing with psychoneurosis. It is also, however, applicable to the psychoses which so often exhibit a very large and active psychoneurotic element. Also, in varying degree, with variations in technic, it is applicable to a majority of medical and surgical cases, such diseases being often complicated by psychoneurotic disorders.

With the individual, as with the community, it does little good to order or legislate health measures, unless such orders or legislation have been preceded by education. It is only thus that we can expect intelligent coöperation. To this end then, in all cases, reëducation should be employed (the technic and detail being fitted to the intelligence and educational status of the individual). Thus the object of each element of the proposed treatment, each step, each order, should be given its real significance. The object of the medication, the procedure or whatever it may be, should be made clear and intelligible, and its possible, probable or certain effect foreshadowed. This principle of psychotherapy, intelligently applied, is of great assistance in all cases, whether medical, surgical or mental, for it results not only in mutual understanding but in intelligent coöperation between patient and physician.

Increasing the effectiveness of intelligence through education is thus the most difficult, but so far the most successful, type of psychotherapy. It is, furthermore, of universal application as mental hygiene, and in this aspect is growing steadily. Its application, especially in childhood, is of greatest importance, for here the old adage that "an ounce of prevention is worth a pound of cure" holds true with peculiar force.

Adverse Suggestion.—Adverse suggestion is the reverse of the medal. All patients are more or less suggestible, no matter what their particular disorder may be. Therefore, suggestion is not a passive tool, to be used or laid aside as the physician may choose. Whether he will or no, his patients continually receive from him, from everything he does or says, harmful or helpful suggestions. The help that may come from the deliberate and intelligent use of indirect suggestion is offset by the harm that may be done by the unintelligent, inadvertent neglect of this powerful influence.

The dangers of adverse suggestion in all cases begin with history taking. Questions as to the neuropathology (insanity, suicide, alcoholism) of antecedents, as to the incidence of tuberculosis, cancer or heart disease in the family, are often necessary, but are redolent of adverse suggestion. They may be harmless or even helpful, not only according to the facts revealed, but

principally according to how the questions are asked and what significance they are deliberately, inadvertently or carelessly given by the inquirer. The favorable or unfavorable impression on the patient is a result of far greater importance even than the information elicited, which is much the same, whatever method is employed. Obviously only necessary information should be sought. Also obviously, whenever possible, the family history should be obtained from someone else besides the patient.

Another danger due to suggestibility is often overlooked in taking a history, and that is the suggestive effect of a leading question. The suggestibility of the patient, influenced by the implication of a leading question, is apt to distort facts if not actually to falsify them. Leading questions should therefore be avoided not only because of their possible adverse effect on the patient, but also for the sake of accuracy.

Physical examination is another opportunity to use or abuse suggestibility. It should be remembered that the patient is undergoing what is to him an unusual and disquieting experience, though it is a usual and very ordinary procedure for the examiner. Too often the physician takes this opportunity to impress his patients with his own dignity and the seriousness of the occasion (a reversion to witch doctors' methods), and succeeds only in mystifying and frightening his victims by his ponderous solemnity. Physical examination is, on the contrary, an excellent opportunity to show skill and quiet efficiency by the elimination of all unnecessary details, and to impress the patient with the keen and hopeful interest of the examiner. It is likewise an opportunity for favorable comment on the conditions found, whenever such comment is justified. A thorough examination should of course always be made, but a method which puts all patients through every possible physical laboratory and x-ray examination as a matter of routine even before the personal conference with the consultant, cannot be too strongly condemned.

Personal Attitude.—One of the adverse influences of suggestibility, especially marked in the ward treatment of medical and surgical cases, but even more marked in nervous and mental cases, is the decrease or even total loss of the patient's sense of identity. This is particularly true of late years, where less medicine is prescribed, therapy is much simplified, and purely scientific interest in his pathology seems to have overshadowed the manifestations of personal interest of the physician toward his patients. The impersonal attitude is appropriate, and in every way useful, in considering a pathological lesion and in evaluating the symptomatology of a disease. But when it includes the patient himself, it is adverse in its suggestion, and definitely bars the patient from a benefit which he deserves and needs. To have

a sympathetic understanding of an individual's needs, of his handicaps, of his assets in life as well as his liabilities, in no way disturbs or runs counter to the scientific ideal of impersonal understanding. Rather it rounds the latter out and points the way for its practical application as therapy, especially as psychotherapy.

A gross example of crude adverse suggestion is given by the hesitant physician who "thinks aloud." He seems to talk to himself while he examines. As a matter of fact, he is talking to the patient, protecting himself against future responsibility for error. "You may have rheumatism, but I don't think so. There may be an intestinal upset or possibly a touch of gripe." What he really means is, "I think I know what's the matter, but I'm not sure, so I divide the responsibility with you. I'm afraid to be wrong and won't take the risk, and so I'm hedging."

Medical self-protection is harmful to the patient, and there is no reason for it except the timidity of the physician. He must be willing to be found mistaken and to take the consequences. Honesty, intellectual integrity and earnest effort are the best guarantees he can give his patients, and with these he needs no safety-devices for himself. He can avoid positive statements where the facts or absence of facts make this necessary, and he can always find a consultant with whom to share the responsibilities when these are really heavy and there is reasonable doubt.

PSYCHOTIC AND PSYCHONEUROTIC.

All that has been said of the dangers of adverse suggestion in regard to general medical and surgical patients, applies with redoubled force when one is dealing with psychoneurotic patients who are always hypersensitive. This is also true of psychotics, who are often largely psychoneurotic, and therefore quite as sensitive.

The first contact with these patients is of the greatest importance. Amusement over their vagaries, anxiety and doubt may easily show through the veneer of the physician's manner, and, feeling these things, the patient withdraws still further within himself or has his latent antagonisms thoroughly aroused. The result is insulation, the opposite of that complete co-operation of patient with physician, which is so necessary to securing a complete history.

But of all the elements to be respected and utilized in psychotherapy the patient's own intelligence is of paramount importance. Only through taking full advantage of it can his complete co-operation be assured, whether his trouble be primarily mental or physical. Only through it can re-adjustment be made permanent and circumstance-proof. Only by understanding the nature of his difficulty and having full knowledge of the rationale of the methods

of re-adjustment can the psychoneurotic's power of choice be made effective and applicable to his problem of adaptation.

AIDS TO PSYCHOTHERAPY.

Forms of treatment which aid psychotherapy, either because of their suggestive force or because they directly affect the disturbed physiology are worthy of notice. Such are prolonged rest with or without isolation, electrotherapy, hydrotherapy, dietetics, serums and vaccines and other forms of physical therapy, the relationship of which to psychotherapy is too obvious to call for demonstration in so short an article. It should be noted, however, that all the forms of aiding our psychotherapeutic efforts and in turn being aided by such efforts, but that there is great danger, especially when dealing with mental and nervous disorders, of over-emphasizing their importance. Thus inadvertently may be produced disappointment and discouragement, or a greatly increased hypochondriacal sensitiveness to physiological condition.

This danger, however, does not apply to Occupational Therapy, which is of great value in convalescence of all types of cases and in the active treatment of many. Through it the patient may learn to overcome his handicaps, through it he is saved the introspective miseries and dangers of idleness, and through it directly and indirectly he re-builds or strengthens his sense of identity and his self-confidence.

CONCLUSION.

There are, then, two outstanding elements in all forms, regular or irregular, of psychotherapy. They are: suggestion, be it indirect or direct, with or without some form of hypnosis; and education. These elements are not only the all-important factors in formally specific psychotherapy, but are always present and to be reckoned with in all forms of therapy. The degree of their potency for good or evil varies directly with the sensitiveness of the patient and the intelligence of the physician.

DISCUSSION.

DR. E. P. JOSLIN, Boston.—With regard to Dr. Riggs, I think the only trouble is that he went into the study of nervous diseases instead of diabetes, and I consider it a great loss to our department. I believe with him in taking advantage of the intelligence of the patient. One should deal with facts, not fancies; when you say a thing, you should stand behind it and let it come out if you are wrong. If you are not wrong, so much the better for you.

AN ESTIMATE OF THE INFORMATION DERIVED FROM THE USE OF TESTS FOR RENAL FUNCTION.

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It is many years now since the attention of the medical profession was first diverted from the pathological anatomy of the kidney to an interest in the functional activity of the organ in Bright's disease. There then was hope that this new method of approach would yield much information and afford such an insight into many of the perplexing problems of nephritis that our ideas concerning the disease would, so to speak, be revolutionized.

The early work of Widal and Javal on the relation of chloride retention to oedema in nephritis was important, and the distinction which they drew between two types of nephritis—one associated with chloride retention, the other with azotaemia or urea retention, was a distinct advance. Shortly after these authors had published their communications the experiments of Shlayer and Hedinger stimulated much research upon impairment of renal function in disease, and since that time an extraordinary amount of work has been done upon this subject. It would take too long to describe in detail all the important advances that have been made along this line, and I must therefore confine myself to a discussion of some of the more practical results that have come from the investigations of renal function in disease.

One essential point must be kept clearly in mind when attempting to draw practical conclusions from these researches, namely, that nephritis, in most instances, is a very complicated disease attended by changes not only in the kidneys but probably in other organs and tissues. The disease cannot be regarded as a mere mechanical injury to the secreting structures of the kidney. It is far more complicated than this. Perhaps it would be nearer correct to regard it as a general disease, in which the kidneys suffer a conspicuous and obvious damage. If such a point of view were adopted it would permit us to interpret upon a rational, rather than an empirical basis, many of the observations that have been made by the newer methods which I shall discuss.

Some of these tests for kidney function, such as the excretion of phenolsulphonphthalein, probably measure directly the activity of one or another function of the kidney itself. Others, such as the determination of the excretion and retention of chlorides, water and nitrogenous substances, may in part be influenced by the metabolic processes in the cells and tissues, and are not always a direct measure of renal activity. In drawing any conclusions, therefore, from

the examinations that have been developed to measure kidney function, one must bear clearly in mind the fact that he is dealing with complicated changes that take place during the course of disease, and is applying them to the practical purpose of diagnosis and prognosis. The significance or insignificance of these changes is not altered by the fact that many of them are measurable by exact chemical methods. They are the result of disturbed function, and are not necessarily indicative of specific anatomical lesions.

Indeed all attempts to distinguish by functional tests types of pathological lesions in Bright's disease have, in the main, failed and the efforts to correlate the functional derangements with the pathological alterations found at autopsy have been unsuccessful.

On the other hand the utilization of these tests in an attempt to diagnosticate the early stages of chronic nephritis, to aid in the prognosis in both acute and chronic forms, and to assist in formulating a rational therapy has proved very useful.

The methods that have been developed to estimate the functional activity of the kidney depend essentially upon four types of technical procedure.

(1) The determination of the rate of excretion in the urine of certain known chemical substances, which are injected beneath the skin or taken by mouth. The substances that have been most widely employed are phenolsulphonephthalein, lactose and potassium iodide. The use of potassium iodide and lactose has now largely been abandoned. The phenolsulphonephthalein test of Rowntree and Gerathy is very widely used, perfectly familiar and very useful.

(2) The determination of the specific gravity of the urine, together with the sodium chloride, and nitrogen content in specimens collected at two-hour intervals during the day with the patient on a special diet. At night one ten-hour specimen is collected and analyzed. A comparison of the day and night amount is of value. This renal test meal, devised by Schlayer and Hedinger, and modified for use in this country by Mosenthal, and Christian and their co-workers is of much value as a test for early renal disturbance. In its simplified form it is not difficult to put into practice, and is now quite widely employed.

(3) The determination of the changes in the amount of normal metabolic products and salts in the blood, including uric acid, urea, non-protein nitrogen, creatinine, glucose, chlorides, inorganic phosphates and sulphates. The microchemical methods of blood analysis devised and developed by Marshall, Van Slyke, Folin and Wu, Denis, Meyer and Kramer, have made available a technique for the study of the chemical constituents of the blood which has added an enormous amount of detailed informa-

tion concerning the changes that take place in the blood chemistry during disease. Since these chemical substances are normally excreted by the kidneys, very extensive investigations have been made by many workers to determine in what way an injury to the kidney may affect their excretion, and how soon this will result in an accumulation of these substances in the blood. The recent work of Denis indicates that the sulphates accumulate very rapidly in the blood when there is the slightest damage to the function of the kidney, and may be found in highly abnormal quantities when all the other constituents are normal. Meyer has emphasized the fact that uric acid is not excreted with great ease, and of the nitrogenous products may be the first to accumulate in the blood with damage to the kidney. Urea and non-protein nitrogen are somewhat more readily excreted than uric acid, and finally creatinine, being most readily excreted, is the last of these substances to rise in the blood in known cases of renal damage. The phosphates, according to the recent studies of Benedict, combine with the ammonia formed by the kidney itself, and are then excreted. When this function of the kidney is impaired, or much reduced, the phosphates are not completely eliminated and they accumulate in the blood, thereby lowering the alkali reserve. When this is marked, a condition of acidosis supervenes. The concentration of chlorides in the blood is affected by so many factors, and the significance of alterations in the concentration of the salt is at the present time so imperfectly understood, that the chemical analysis of this constituent cannot be used to practical advantage.

(4) The determination of the ratio between the concentration of such metabolic products as urea in the blood and the rate of its excretion in the urine. The original technique and formula devised by Ambard for the determination of the index of urea excretion was later modified by McLean in this country and was for some time employed quite extensively. The recent investigations of McLean and de Wesselow and of Addis and his associates, on the excretion of urea, are of importance in explaining some of the factors that regulate the excretion of urea in the healthy adult; and when the normal relations have once been thoroughly established, it may again be possible to employ such tests in diseased states, with the expectation of obtaining reliable results.

Of the four types of tests, the ones that have been most widely used, the ones with which we have had the longest experience and the ones that, in general, have given the most reliable results are first—an estimation of the phthalein excretion; second, the renal test meal, and third the determination of the concentration of the chemical constituents of the blood. Of these the most important are urea, non-protein nitro-

gen, uric acid, creatinine and the CO_2 combining power of the blood, which excluding other causes for acidosis gives an indirect measure of the phosphates. The experience with these tests has been so extensive that we are now in a fair position to draw some conclusions regarding their value and their limitations. Above all it must be understood that their true significance can be correctly appreciated only when these tests are considered in combination with the clinical picture. Such determinations alone may mean anything or nothing but regarded as a part of a disease process they often contribute important information.

As is well known the normal function of the kidney may be profoundly disturbed in other conditions than nephritis. One of the commonest of these is the chronic passive congestion that comes from cardiac failure. If at the same time the chronic passive congestion is combined with a low blood pressure, the conditions are present that disturb profoundly the renal secretion. The oliguria, albuminuria, cylindruria and even hematuria of chronic passive congestion are very familiar. Under these conditions it has been found, both experimentally and clinically, that the excretion of phthalein may be much diminished and that the non-protein nitrogen or urea of the blood may be somewhat elevated above normal. At the same time the specific gravity, in the two-hour test, may be fixed at a high level, and the excretion of chlorides diminished. With the restitution of the circulation, the congestion is relieved and the renal function in uncomplicated cases returns to normal.

Again in a disease of quite a different nature, namely pernicious anaemia, the kidney function as measured by one of these tests may, as was first shown by both Mosenthal and Christian, be definitely impaired. In the remissions of the disease the two-hourly specimens of the urine, collected according to the Mosenthal technique, may show fixation of specific gravity, inversion of the night and day quantities, and an elimination of chlorides and nitrogen, which, according to Christian, is identical with the changes observed in advanced chronic nephritis. There may not, on the other hand, be any impairment in the excretion of phthalein.

Though the severe anaemias seem to result in a definite impairment of one form of renal function, namely, the ability to concentrate the urine, the acute infections, which, at one time, were supposed to cause considerable renal damage, on account of the frequent occurrence of albumin and casts in the urine, do not seem to be accompanied with any regularity by a derangement of function as measured by these tests. There is, however, one possible exception. In pneumonia, both in the acute stage and during convalescence, several observers have noted an increase of non-protein nitrogen and urea

in the blood combined with a decrease in the excretion of phthalein.

In certain types of intoxication, on the other hand, the most profound changes may occur, and at times are so pronounced as to simulate the conditions often encountered in uremia. I refer here to the interesting alterations that have been observed to accompany acute intestinal obstruction, that have followed experimental proteose intoxications in dogs, and that may occasionally be met with in other more obscure forms of intoxication. The original studies of Whipple and his associates upon the blood chemistry and phthalein excretion in experimental intestinal obstruction in dogs, showed that shortly after a high obstruction had been produced, the blood urea rose and the phthalein excretion fell. An examination of the kidneys of these dogs did not disclose any demonstrable anatomical lesion. Similar changes in the blood urea and phthalein excretion were found to take place after intoxication by proteose. In the human being Tilestone and Comfort were the first to note an increase in non-protein nitrogen and urea during the course of an intestinal obstruction. Since then a number of observers have confirmed and extended this observation, one of the earliest series of cases having been reported by Luria from the Presbyterian Hospital in New York. Indeed the condition is now so familiar that it has become of some diagnostic significance to find a constantly rising blood urea or non-protein nitrogen in a patient suspected of having an acute intestinal obstruction.

In other forms of intoxications accompanied by gastro-intestinal symptoms combined with skin eruptions, or in obscure intoxications following blood transfusions, the same changes may at times be encountered.

Three instances of the latter type have recently been observed and will be described in detail elsewhere. The patients were all males suffering from pernicious anaemia. They had all received transfusions previously without experiencing untoward symptoms. The reaction in each instance followed a transfusion of citrated blood. It consisted of a preliminary rise in temperature, and fall in blood pressure, followed by nausea, vomiting, abdominal pain, and a period of oliguria. The urine contained much albumen and many casts. Following this primary reaction there was a rapid rise in the non-protein nitrogen, the creatinine and uric acid of the blood, which reached in one instance, on the third day after transfusion, the following figures: non-protein nitrogen 150 mg. per 100 c.c.; uric acid 7.27 mg. per 100 c.c.; and creatinine 4.28 mg. per 100 c.c. Gradually this reaction subsided in two instances, and within two weeks of the date of transfusion the non-protein nitrogen, uric acid and creatinine of the blood

were normal, while the urine contained but a trace of albumen and a few granular casts.

But enough has been said to illustrate the fact that in conditions, other than nephritis as we understand it, these tests show marked deviations from the normal. At the present time the explanation for these abnormalities is not always clear. Some are undoubtedly due to temporary disturbances in the function of the kidney itself. Others may be dependent upon an upset in the metabolic equilibrium of the tissues or cells, which resembles very closely the condition observed in some forms of true nephritis.

And now we may do well to inquire into the actual conditions that are seen in nephritis itself.

In the acute forms of nephritis and nephrosis, as some of the cases of Bright's disease have been termed, the tests are not needed for diagnosis. The character of the disease is so striking that the diagnosis is always made upon the clinical features, and from the examinations of the urine. Indeed it is very striking that in one group with anasarca, low blood pressure and marked albuminuria, all tests for renal function may be normal, save for the oliguria and marked retention of chlorides. Even when these cases run a subacute or chronic course, the excretion of phthalein and the blood chemistry may remain within normal limits. It is in cases such as these that Epstein has described a low protein content of the serum with a relative increase of globulins and definite increase in lipoids. To combat this abnormality high protein diets have been advised, but occasionally with such diets an increase in the non-protein nitrogen and urea of the blood has been observed, which falls again to normal when the protein in the food is reduced.

In another type of acute nephritis, however there may be notable and rapid changes particularly in the blood chemistry. In such instances the acute onset may or may not be attended with oedema, but is with considerable regularity associated with an increase in blood pressure, albuminuria and haematuria. Such instances have been termed by Volhard and Fahr acute glomerular nephritis. When the disease is accompanied by oedema, which is often the case, this is considered by Volhard and Fahr to indicate that the typical acute glomerular nephritis and the nephrotic process are combined.

A study of the renal functional tests in these cases of acute hypertensive nephritis may be of distinct value for prognosis. In the early stages of the disease, the blood pressure is elevated, the uric acid, urea and non-protein nitrogen of the blood may rise to highly abnormal values, and in severe cases, even the acid phosphates may increase and cause varying degrees of acidosis, while the urine may show fixation of specific gravity at a high level. In spite of many of these abnormalities it is often

surprising to find that phenolsulphonephthalein is excreted in perfectly normal quantities. This fact has repeatedly received special mention in the recent literature. In favorable cases, all of these abnormalities may be of temporary duration, and within two to three weeks, or even in less time, the picture may return to normal.

In spite of the persistence of albumen, casts and red blood cells, experience with many of these cases leads to the belief that the prognosis is good. As to whether recovery is permanent cannot, at the present time, be told. We have few accurate data, collected over long periods of time, upon such cases, and it will be important to know whether these patients are especially prone in later life to hypertension or the slowly progressing forms of chronic nephritis. At present there is no evidence to show that this is so.

In still another group of cases suffering from acute nephritis the disease may run a somewhat different course. The onset may be sudden, with oedema, oliguria, albuminuria and cylindruria, but there is no increase in blood pressure. During the oedematous stage, the function of the kidney, as measured by the special tests, may seem quite undisturbed, for the phthalein excretion may be absolutely normal, and there may be no increase in the amounts of uric acid, urea or non-protein nitrogen of the blood. On rest in bed improvement may take place rapidly. Diuresis starts quite promptly. The oedema disappears, the albuminuria decreases, but while symptomatic convalescence is seemingly being established, the more precise examinations may show for the first time alterations that have been ascribed to the results of renal damage. The phthalein output diminishes, the blood urea and non-protein nitrogen increase above the normal and the blood pressure may show some elevation. These disturbances coming late in the disease may be ascribed in part at least to an impairment of renal function, appearing almost as a residual phenomenon. They persist for varying periods of time and then disappear as the renal function actually returns to normal. Eventually recovery may be complete except for a slight albuminuria, and all methods of examination will fail to show any trace of disease.

These functional tests are also of value in giving us information concerning the progress from an acute, through a subacute stage of the disease, to a chronic phase that may soon terminate fatally.

In the acute forms of nephritis, therefore, one obtains very variable results with the employment of these different methods of examination. There are constant changes. The disease may run a rapid course, often, fortunately, to complete recovery, and the chemistry of the body fluids as well as the secretory activity of the kidney may change as rapidly and as frequently

as do the more obvious physical signs and the symptoms of the disease. The more elaborate chemical examinations and functional tests may be employed to advantage in forming some opinion about prognosis, but I have received the impression that the phthalein test is one of the most reliable in affording evidence, in the acute cases, of severe and progressive injury to the kidney. In most acute cases the phthalein excretion is normal or only slightly affected. But when it is much reduced and when the elimination of the dye progressively diminishes, the prognosis is likely to be serious, the recovery is protracted, or the disease becomes subacute.

Undoubtedly one of the most useful purposes to which these tests may be put is to detect the early changes in the secretory activities of the kidney in progressive chronic nephritis. This type of nephritis is so frequently combined with hypertension, in adult life and in advancing age, that it requires great refinement of clinical methods to distinguish between the types of essential hypertension in which there is no significant involvement of the kidney, and the types of hypertension combined with chronic and progressive nephritis. In the first group the greatest danger to life lies either in failure of an hypertrophied and dilated heart, or in rupture of a cerebral blood vessel; in the second group the gradually decreasing function of the kidney may end in uraemic coma.

The development of methods, both to detect the earliest changes in renal function, and to measure their progress or control by treatment in this form of nephritis, is an important contribution. One of the most satisfactory of these tests at our disposal to detect the early stages of chronic nephritis, is the determination of the ability of the kidney to concentrate the salts and waste products which it excretes. The renal test meal serves most simply and efficiently to do this. It cannot, of course, be used in the presence of oedema. In the early stages of this form of chronic nephritis, under the conditions of the test, the urine assumes a character quite different from the normal. The two hourly specimens no longer show the variations in amounts and in specific gravity that characterize the normal flow, and the quantity of urine passed at night tends to equal and even to exceed that voided during the day time. As the disease progresses this constant flow of urine becomes more pronounced, and the separate specimens are more uniform in character. This tendency to excrete in fixed concentration both salts and waste products is first detected in the uniform elimination of the chlorides, and later in the uniform elimination of nitrogen. Finally in the advanced stages of the disease the kidney loses its power to concentrate the solids of the urine, and excretes both day and night a fluid almost uniform in concentration of chlorides and of nitrogen. Even reduced to its simplest

form this test may furnish information of considerable practical value. The patient is given a standard diet, containing salt, with the heavy meal at midday; the total fluid intake is limited to 1500 c.c. and is taken only with the meals; with the estimation of the amount and specific gravity of the two-hour specimens of urine voided during the day, and a comparison of the total day and night specimens, quite reliable and useful results may be obtained.

The phthalein test, in many instances, comes next in delicacy. Even in the early stages of this form of nephritis a reduction from normal to 30 per cent. to 40 per cent. excretion of the dye in two hours is not infrequently encountered, and with the progress of the disease the decreased elimination becomes more marked. An increase in the non-protein nitrogen of the blood, on the other hand, does not become evident, in many instances, until the disease is quite far advanced, and therefore is of limited value in early diagnosis. In the future, a further development of some of the methods to determine the rate of urea excretion may be made applicable for early diagnosis. It has been suggested, particularly by Meyer and by Baumann and his associates, that an elevation of the uric acid of the blood occurs early in this type of nephritis, and they emphasize the possible diagnostic value of such findings. Later studies have shown, however, that the blood uric acid may be increased somewhat in a variety of diseases, and is so readily influenced by purin metabolism that a moderate increase of this substance in the blood is not in itself of special significance. The recent work of Denis on the elimination of sulphates promises to furnish a method by which one might detect even a slight but permanent impairment in the secretory activity of the kidney, but so far our knowledge of the conditions under which the sulphates accumulate in the blood is very limited.

A repetition from time to time of the test to determine the ability of the kidney to concentrate, of the phthalein test, and of estimations of urea, of non-protein nitrogen, and of creatinine in the blood, gives valuable information concerning the progress of the chronic nephritis. The prognostic significance of high values for blood urea, non-protein nitrogen, and creatinine, is now fairly well established. A moderate elevation of blood urea or of non-protein nitrogen up to 40-60 mg. per 100 c.c. of blood may occur early, and persist unchanged in patients who live for months or years. On the other hand, occasional patients with progressive chronic nephritis who are under treatment may show practically normal blood nitrogen figures to within a few weeks of their death in uraemic coma. This may occur in face of the fact that all the symptoms and signs indicate clearly that the patient is growing rapidly

and progressively worse. An increase of inorganic phosphates in the blood, and acidosis in nephritis is usually seen only in an advanced stage of the disease.

In general it has been found that increasing figures for the non-protein nitrogen, urea, creatinine, and phosphates of the blood are of grave import, and the patient suffering with chronic nephritis who presents this picture is dangerously near uremia.

In conclusion it may be said that no one of these tests, or, indeed, scarcely any combination, is alone indicative of nephritis as we now understand the disease. In the acute and subacute forms of the disease they need rarely be employed for diagnosis. For prognosis, however, as an indication for treatment, and to measure the degree of recovery, the phthalein excretion and blood chemistry may be used to good advantage in acute nephritis. In the chronic form of the disease the test devised to measure the power of the kidney to concentrate chlorides and nitrogen, and the phthalein test are of real value in accurate and early diagnosis. A study of the blood chemistry furnishes a method which sometimes gives further assistance in diagnosis, but is of much more value for prognosis and the control of therapy. In the later stages of the disease, when uremia is pending or when the patient is in coma, a study of the blood chemistry is one of the most important adjuvants at our disposal in differentiating uremia of nephritic origin from other forms of convulsive seizures and coma, with which it is so often confused.

DISCUSSION.

DR. J. P. O'HARE, Boston: One of the most important things that Dr. Longcope said in his paper on renal function tests is a statement early in the paper that we must correlate both clinical findings and tests of renal function, and that statement cannot be emphasized too greatly. The tests of renal function, as we have seen them developed in the last ten years, have gone through many stages, and at times we have run riot with them. We have depended too much upon them. The tests of renal function are adjuncts to older methods. They are extremely valuable adjuncts, as Dr. Longcope has indicated, but they are still merely adjuncts to the older methods. In no sense do they allow us to do away with a good history, a good physical examination, or a proper urine analysis. The urinalysis is just as important as it ever was; in fact, perhaps a little bit more important.

On the examination of the sediment often depends the interpretation of these tests of renal function. A patient may have a low phthalein, a blood urea nitrogen 8-10 times as high as it normally ought to be, creatinine

10 times as high as it should be; and yet that patient may recover a very good function, perhaps a normal function. We have several of those cases upon whom, in the older days, we made prognoses that were absolutely wrong. On the basis of very poor functional tests, we interpreted a course that was very rapid and very short, and predicted death within a very few days. These patients have taught us a great deal. On going over the records, we realize that the patients who recovered were the ones who had an active nephritis. You will remember that if the kidney is given a chance, it will repair itself. Its function will return very well indeed. But a chronic sclerosed kidney will not come back; it may improve slightly, due to improved circulation from the heart, or to general circulatory improvement; but it will not come back. The tests of function there indicate something entirely different than in an active nephritis. In an active nephritis, you have in the urine evidences of that activity—blood, brown granular casts, etc. In the presence of such activity, one must be extremely cautious in prognosticating a fatal end or a short course because of these tests of renal function. That, I think, is one of the most important cardinal principles to remember in connection with these tests.

The other one is this: That the tests, to be of any great practical value must be simple and must be short. A test that takes several days of the patient's time is absolutely out of the question for practical purposes. It is all right for those of us who are still experimenting with the disease and trying to find out something about those tests. But it is not of value for the average individual at all. Furthermore, such a test, in my experience, is open to so many sources of error that one cannot possibly control them. We want, therefore, to sit tight and use the simpler methods, such as Dr. Longcope has indicated. These have stood the test of time.

The three tests that we are relying on mostly at the present time, in the Brigham Hospital, the phenol-sulphone-phthalein test (which often must be repeated, as it may be incorrect, or the result may be wrong), the blood urea nitrogen (possibly the non-protein nitrogen), and the two-hour renal test. A good history, repeated careful physical examinations, repeated careful urine analyses, and then proper interpretation of these three simple tests, will give you a tremendous amount of information about the diagnosis, the prognosis, and the treatment of your nephritic patient.

DR. W. R. OHLER, Boston: I am in entire agreement with all that has been said by Dr. Longcope, and particularly with what Dr. O'Hare said about the necessity of a careful history and a careful physical examination of our

cases of nephritis. I think it cannot be overemphasized that these tests are, after all, tests of function and not tests of a diagnostic nature. It seems to me that I might well spend my time in saying just a few more words about the tests themselves.

First, I would like to emphasize the fact that there is really no mystery about these function tests. In other words, with the exception of the blood urea test, all of the tests can be done by the practicing physician. About the phthalein test—I believe if it is well and carefully done, it is of great value. The discrepancies in the phthalein test are due largely to errors in technique. In doing this test, one should be very careful to give exactly one c.c. of the dye when the injection is done; if you have a leaky syringe or needle, your test must be thrown out. When the urine is collected in a specimen bottle or bed pan, they should be rinsed out with water, when you are diluting up to 1000 c.c. I have repeatedly demonstrated that from 5 to 15 per cent. of the dyed material is left behind in the bed pan. This is something which nurses are prone to overlook, and I think it should be borne in mind when the phthalein test is being used.

The two-hour test is really perfectly simple. It can be done at home, and needs only an ordinary diet arranged as Dr. Longcope has mentioned. It does not necessitate that the patient come to the hospital. We have used it in our out-patient departments on patients of an average degree of intelligence. I want to point out a valuable thing about the two-hour test which has not already been mentioned. When you do the test you have seven or eight separate specimens to be studied not only for amount and specific gravity, but also for the presence of albumin, sugar, casts, etc. In other words, a complete urinalysis should be done on each separate specimen. If that is done, you will very often run across pathological findings in the sediment which are not found in the 24-hour amount. Also, one very often finds sugar in single specimens, especially the specimens which come directly after meals. This is a point which has recently been brought out by Dr. Horace Gray of Boston, working in Dr. Joslin's clinic.

I thought it might be interesting, inasmuch as Dr. Longcope spoke about the sub-acute and chronic forms, to show you two pathological specimens which have been mounted for me by Dr. Mallory to demonstrate the pathology of the so-called sub-acute and the chronic types. This first one is a kidney from a patient fourteen years old. You see it is the so-called large white kidney. That patient, five years before his death, had an acute nephritis; following that, repeated and intermittent attacks of edema. He always recovered and between attacks he felt fairly well. His urine, however, constantly showed large amounts of albumin; his function

tests were pretty nearly normal; his phthalein tests about 40 per cent., and his blood urea nitrogen almost normal. Suddenly within six months he went rapidly down hill and died in uremic coma—during which time the blood urea nitrogen rose to a very high figure, as one would expect. This illustrates pretty well how rapidly serious changes may take place in a case of so-called sub-acute glomerular nephritis.

In the chronic type of long standing, we have a very small and granular kidney. This was also in a young man of twenty-one whom we followed for eight years. He had a high blood urea nitrogen of 40 to 60 mgm. Careful attention to focal infections, diet and general hygiene kept him on a fairly comfortable level. Following an acute respiratory infection of mild degree, the blood urea nitrogen began to rise, despite the fact (in agreement with Dr. Longcope) that clinically the patient did not feel much worse. This patient died in uremic coma.

DR. JOSEPH H. PRATT, BOSTON: I wish to emphasize the value of a functional test that Dr. Longcope has not mentioned, and one to which little attention has been given in this country. It is known as the dilution and concentration test. It has been employed as a functional test of the kidneys by Volhard, Strauss, Schlayer and other German clinicians during the past ten years. This is a test which is simpler than the so-called "two-hour test," or nephritic test meal, and it may give information not furnished by Mosenthal's "test day for renal function." It reveals more nearly the maximum power of the kidney to excrete water and also the extent of the ability of the kidney to eliminate solid constituents with small amounts of water. In other words, it gives the maximum dilution and the maximum concentration. I have used this functional test during the past two years in a group of cases with increasing regard for its value in the recognition of abnormal kidney function. It is so simple that it can be employed by any physician in general practice.

The test, as I employ it, consists in giving the fasting patient at 7 o'clock in the morning 1000 c.c. of water, or 1000 c.c. of weak tea. As originally used by Volhard, 1500 c.c. of fluid were given. I formerly used that quantity. With most patients 1000 c.c. are sufficient. This modification is recommended by Friedrich Müller. If the patient is given the choice of water or tea you will find that a liter is taken quite readily. If 1500 c.c. are given it is well to allow the patient to sip it slowly. The whole volume should be swallowed within an hour. I have my patients take the 1000 c.c. of fluid within five or ten minutes. No food is given until 11 A.M. Then a breakfast without fluids. A dry diet—eggs, cold meat, bread, cheese and potato—is also given for luncheon. There is usually little

discomfort from thirst. At 7 o'clock fluid may be taken with the supper. The amount should be measured. Fluid may also be taken throughout the evening in sufficient quantity to satisfy the patient's thirst.

At 7 A.M. have the patient empty the bladder. The urine is collected every two hours throughout the day until 9 P.M. The urine from 9 P.M. to 7 A.M. the next morning is collected, but not in separate portions. It is well to allow the patient to void urine at 8 A.M. as the secretion in the first two hours may be so great as to cause painful distention of the bladder if he is not allowed to void until 9 o'clock.

The volume of each specimen is measured and the specific gravity ascertained. Normally, the entire amount of water taken is excreted in from four to six hours. The specific gravity falls to 1005 or less. In many cases of kidney disease and in cardiac weakness the excretion of water is diminished or delayed. In the afternoon, as no additional fluid has been taken, the urine normally becomes highly concentrated. The specific gravity rises to 1025 or more. In many nephritis the power to concentrate the urine is impaired. This is shown by the specific gravity failing to reach 1025.

I agree with Dr. Longcope that an increase in the amount of uric acid in the blood is not a trustworthy indication of impaired renal function, although an increase is found in most cases of early chronic nephritis. Nearly ten years ago in one case I largely based my diagnosis of mild chronic nephritis on a distinct increase of uric acid in the blood. I have examined the patient at intervals since then and have found no additional evidence of kidney disease.

There is a very simple test which many practitioners do not use, but which does yield information of importance in diagnosing beginning renal insufficiency. It is the complete collection of the day and night urine separately. I have the urine collected in twelve-hour periods, usually beginning at 7 A.M. I request the patient to drink no fluid after 7 p.m. An increase of the night amount above 600 c.c. is one of the most constant findings in early chronic nephritis.

FOCAL INFECTIONS IN RELATION TO SYSTEMIC DISEASES.

BY W. GILMAN THOMPSON, M. D., NEW YORK.

THE term "focal" as applied to infections is admittedly vague, but many infections, being for a time distinctly localized, perhaps for months or even years, may suddenly, through invasion of the lymph or blood channels, give rise to systemic symptoms which may be gener-

alized or produce more or less localized lesions in parts of the body quite distant from the original circumscribed area involved. It is to such conditions that, for lack of better terminology, it is convenient to apply the name "focal infections."

This point of view, developed in quite recent years, offers explanation of many disorders which previously were etiologically obscure and therefore oftentimes mistreated.

Perhaps the best illustration of this is found in such diseases as arthritis deformans and chronic rheumatism with acute exacerbations. The frequent association of tonsillitis, chorea, endocarditis and arthritis, occurring from time to time in the same patient, was early recognized clinically and attributed to the same disease entity, to "rheumatic diathesis," etc., with the result that emphasis was laid upon dietary treatment and the exhibition of alkalies, salicylates, and the iodides, not alone to combat acute symptoms, but to prevent, as it was supposed, their recurrence. Now much of this has been changed, and with the belief in the existence of a continued source of reinfection from a demonstrable chronic focus, it is recognized that whatever remedies be employed to relieve acute symptoms, they are valueless as preventives unless the primary focus be diligently sought and removed.

Owing to the many difficulties which beset the subject, it is impossible as yet to give statistics concerning the relative frequency of systemic symptoms in relation to the different sources of focal infection. One may only offer general impressions. I should say that the tonsils and teeth are responsible for the great majority, with the honors considerably in favor of the teeth. The nasal sinuses when chronically infected no doubt are a menace for many respiratory diseases, but are much less liable to affect the heart, or cause arthritis and various nerve disorders, with the exception of facial and supra-orbital neuralgias. But apart from actual focal infections, the sinuses are known to afford favorable breeding ground for germs which, like the pneumococcus, do not directly involve them, and they may serve both as carriers and ports of entry for the germs of many diseases. Chronic otitis, on the other hand, is much less often responsible for systemic infection.

Referring to the opposite end of the body, prostatic abscess also may give rise to quite remote symptoms, including lesions of the joints.

There is one stumbling-block in the general acceptance of the doctrine of focal infections as a cause of systemic diseases which still exists in the minds of some. It is the undoubted fact that many persons harbor diseased tonsils and teeth for years without anything more than local lesions, of which they are entirely unconscious. We must admit that there are over a hundred

million people in this country, the vast majority of whom remain well and actively employed, and yet diseased tonsils are very common, and very few of the adults, and even of the youths, can exhibit teeth which are wholly above suspicion. Our recent army statistics, collected on so huge a scale, were quite startling in demonstrating this fact. In a long experience in Bellevue Hospital, where so many of the poor and destitute are treated, I often was impressed by the extraordinarily bad teeth which I found in patients who presented no systemic symptoms in any way referable to them. On the other hand, I have personal acquaintance with an industrial plant employing some 10,000 workmen, where a dentist has been added to the medical organization during the past two years. By treating the large number of root abscesses which he discovers among the employees, he already has markedly reduced the "lost time days" among men who complained not of toothache, but of joint inflammations, lumbago, neuritis, neuralgia, sciatica, general malaise and similar ailments. In fact, barring accidents and injuries, I am inclined to think he saves the company as much money as all the rest of the medical service together. It is interesting, too, that tonsillectomy in these patients is seldom required and very infrequently performed.

There is another stumbling-block in the general acceptance of the relationship under discussion which appears in the experience of all of us. It is that patients sometimes return after removal of diseased tonsils or teeth, which we have assured them would cure their systemic symptoms and prevent recurrence, with the statement that they are no better, or possibly worse off than before. In such cases we may have overlooked some important disease foci, of which there are more than one, or, as in the case of advancing chronic arthritis, there is a possibility of extension of the symptoms from one part of the body to another, irrespective of the primary focus which has originated the trouble. In other words, the patient has come under observation too late. I have become wary of promising the patient with advanced arthritis a cure through wholesale removal of teeth and tonsils, although I have yet to meet such an one who did not at least give a history of extensive pyorrhea or peridental abscesses, usually of long duration.

There are several explanations of the frequent absence of systemic symptoms in patients presenting advanced local infections. A quite natural one is that immunity has gradually been established, or that the patient possesses a greater or less degree of natural resistance to infection, such as is commonly observed among different races. The localized germs, too, may vary much in virulence, and finally, the local infection may be relieved by free surface drainage, as in the case of some pus tonsils, or may be walled

off, in the case of the teeth, by a greatly thickened peridental membrane. Again, in the example of the tonsils, some acute exacerbation may intensify morbid processes which have become quiescent, or an injury, as in biting some hard substance, may rupture the abscess wall at the root of a tooth, and thus a long latent menace becomes acute, and absorption takes place.

Admitting the potential danger which chronic local infections constantly bear for the development of systemic symptoms, it is interesting to speculate upon the relative frequency of the different clinical pictures produced. In this matter I can only offer personal impressions, for the field is broad and not yet to be defined with the distinctness of many of the infectious diseases.

Most common of all are a considerable variety of nerve, muscle and joint affections, ranging from neuralgias, neuritis, sciatica, and myositis, to arthritis, synovitis, bursitis, and possibly the so-called arthritis deformans, with the characteristic changes in the cartilages and articular surfaces of the bones. It is most desirable in all such cases carefully to examine the mouth, and wherever extensive pyorrhea, decayed stumps of teeth and, particularly, capped-over teeth are found, to refer the patient for dental treatment and insist further upon having x-ray pictures sent back by the dentist. When this is done, it is astonishing how much latent focal infection often is revealed. The capped-over stump of an old tooth root is a whitened sepulchre. It gives no pain, or the patient long since would have applied for relief, and this is true even where large peridental abscesses with considerable bone absorption may exist. The patient is proud of what he calls the "gold mine" in his mouth and of how much he has paid to save a long-cherished set of stumps which he would be infinitely better off without. Indeed, I have had such patients tell me that their mouths had been passed by the dentist within a few days as in fine condition because, on tapping the surface of elaborate gold crowns, no pain was elicited. But upon referring them for x-rays extensive underlying trouble would be revealed. In not a few such instances I have known long-standing neuritis or sciatica, previously rebellious to medicinal remedies, entirely to disappear with no further treatment than cleaning out a hidden pus pocket or scraping out an area of necrotic bone.

Of course, in the group of cases of the types under discussion, there may be other sources of infection, as in the tonsils, but since my attention has been directed of recent years to the condition of the teeth, I more and more often find in them the possibility of securing permanent relief of symptoms for which medicinal treatment proves of merely temporary benefit.

Another less common but far more serious

type of cases are those in which a degree of anemia ensues so profound as to menace life, either with or without a generalized septicæmia. In these instances various types of streptococci and staphylococci may be demonstrated, and particularly the viridans. The anemia is often mistaken for the so-called "pernicious" type, although lacking in certain of its definite characteristics, but "pernicious" it certainly is in its rapid advancement and gravity. I happen quite lately to have seen three such cases, practically identical in mouth conditions, history and degree of anemia. One of them affords so striking an illustration of this thesis that I may be permitted to refer to it in some detail. The patient, a prominent clergyman, 59 years old, was brought to me from out of town by his physician with the diagnosis of "pernicious anemia." A year before he had been warned by his dentist that a number of his teeth were in menacing condition, but he was content with having one abscess only removed. He shortly thereafter developed increasing weakness and malaise with an anemia of alarming degree. Several months before I saw him he began to complain of spinal cord symptoms, such as stiffness in the arms and legs with formication, disturbances of the tactile and heat senses, disorientation in the fingers and toes, a steppage gait, etc. His physician suspected infection from the teeth and a half dozen more teeth were withdrawn. The heart muscle being so ill nourished, there resulted several attacks of acute dilatation with an irregular greatly accelerated pulse, and a loud mitral systolic bruit which later proved to be functional, although when I first saw the patient I feared he had a septic endocarditis, for he also had petechiae and a temperature of 104.5° F. At this time he had a pulse of 130 and respirations of 32. The red corpuscles had dropped to 2,200,000 with marked poikilocytosis and anisotaxis and hemoglobin was 42 per cent.

With this picture of rapidly advancing septicæmia recovery seemed quite hopeless, but transfusion was resorted to with immediate and quite extraordinary benefit. Dr. Lester J. Unger gave two direct transfusions of respectively 800 and 900 cubic centimeters with a five days' interval, the blood being of type four, and five days later both temperature and respiration became normal and so remained. The pulse rate also fell, the cardiac dilatation was overcome, and shortly after the bruit entirely disappeared. A week later a third transfusion of 1,000 cubic centimeters was given and within three weeks after the first transfusion the red cells rose to 4,600,000 and the hemoglobin to 82 per cent., the spinal cord symptoms rapidly lessened and the patient was able to walk about and eat a normal diet. As an incident a large abscess, such as is not uncommon in similar cases of

septicæmia, had to be evacuated. In this instance it was over the right gluteus, the localization there being evidently determined by a number of deep intra-muscular injections of sodium eacodylate which had been given before the patient came to me. Such injections often are irritant and in a patient whose blood content is so poor, I have never seen any benefit from them, while there is decided risk in the irritation of subcutaneous or muscular tissues in a body with such poor resistance.

This is a typical example of long neglected focal infection passing finally beyond the stage in which belated removal of the primary cause could not alone have resulted in cure, but which was rescued by the increased resistance afforded by reënforcement of the blood by transfusion. Blood cultures proved negative, as they often do in such instances, and as the primary focal abscesses had been cleansed out there was nothing from which to make an autochthonous vaccine.

A second of the three illustrative cases is that of a man 64 years of age who gave a practically identical history and blood picture lacking only the spinal cord and cardiac complications. Three transfusions have resulted in bringing the red cells from 2,000,000 to over 3,600,000 and the hemoglobin from 30 per cent. to 65 per cent. In this case also poikilocytosis was extreme and only a very small number of the red cells appeared normal in contour. This patient is still undergoing treatment, but presents every appearance of convalescence, although when I first saw him recovery seemed impossible.

The third case was that of a man 50 years of age with a similarly neglected condition of root abscesses with maxillary bone necrosis and a blood picture of 3,200,000 red cells. Numerous pyemic abscesses formed in the arms and legs and a slough nearly encircled one arm, necessitating extensive skin grafting. A septic temperature rising to 104° F. fluctuated for ten weeks. Trophoneuritis and a thrombophlebitis were further complications. When I first saw the patient in consultation in this so gravely enfeebled condition, his physicians feared that extraction of any of the teeth might cause death from shock or that the ensuing trauma would flood the system with a fatal quantity of pus. I remarked, however, that if he were going to meet his Creator, he might better do it with a clean mouth than a foul one, so we took the chance and on successive days a half dozen rotten tooth stumps were removed and the necrotic bone was treated daily for a long time. From the abscesses a *staphylococcus aureus* was obtained and an autochthonous vaccine was given. Complete recovery was protracted through six months owing to a trophoneuritis of one leg and the multiple skin grafts required for

the arm, but the patient has remained entirely well for three years.

Surely extreme cases like these are none the less impressive through their comparative rarity, and the lesson to be derived from them may well be borne in mind by physician and dentist alike for impressing upon patients the danger of harboring long-continued focal infection when it is so obvious.

Another quite different group of focal infections is that in which the circulation becomes involved, with the exclusion of other symptoms. Particularly is this observed in the aged who notoriously are neglectful of mouth hygiene. Here cardiac arrhythmia and general enfeeblement of the circulation may sometimes entirely disappear when an extensive pyorrhoea or a series of decayed tooth roots are treated antisепically. I have met with a number of such patients in whom, through the aid of a dentist, I was enabled to revise an original diagnosis of a senile myocarditis. One of these was a patient over 80 years of age and for a long time I had failed to make any impression upon a marked arrhythmia, a very feeble pulse and decided asthenia, with digitalis and other cardiac stimulants. She was too feeble to visit a dentist, so I got one to go to her daily for several weeks and treat the mouth with antiseptics. There followed prompt disappearance of the arrhythmia with an extraordinary improvement in the patient's general mental and physical condition.

I hesitate to refer with confidence to the possible influence upon high blood pressure of focal infections for the matter is complex and as yet indeterminate, and it is easy to give a false impression of enthusiasm. Yet I have met with a few instances in which decided fall in blood pressure followed the exercise of dental hygiene alone, and was maintained. Certainly the matter is worth a passing mention, although, as in many other conditions, the improvement may be due to betterment of digestion incident to a clean mouth rather than to any direct absorption of products of infection.

A very interesting phase of the topic under discussion is the influence of focal infections upon the psychoses. In some of the asylums and sanatoria in which the practice of dentistry lately has been emphasized, quite unlooked for beneficial results have been obtained, and whether or no one's enthusiasm leads to adoption of the theory that a given psychosis ever may originate from a focal infection, it is a matter of increasing experience that attention to hygiene of the tonsils and teeth often has a decided and immediate effect in improving the mental state in marked degree. Here again there is the possibility that the improvement may result from betterment of digestion and lessening non-septic toxæmia, rather than from

elimination of bacterial focal infection. In either case, however, it is the result rather than the theory which is important. The whole problem, moreover, is interwoven with modern views of the endocrine influences which in turn may be modified by toxæmias. One is constrained to admit the probability that biochemical cerebral cellular disturbances of mild purely functional type sometimes, at least, may take origin from circulatory toxins derived from focal infections.

Functionally psychotic patients usually neglect the care of their mouths and in them decay rapidly advances. From such mouths both hemolytic and non-hemolytic bacterial strains frequently may be derived from both tonsils and teeth. Secondary infections of the alimentary canal may arise through swallowing these types of bacteria developing in the mouth, setting up new foci of infection in the digestive organs. It is this type of case which, although it may not originate in a focal infection, often is benefited so markedly by simple antiseptic treatment. A middle-aged woman with depressive psychosis, who has been under my care for a year, has several infected teeth, but all effort of the dentist to treat them is met by such violent resistance that we have been obliged to attack the problem from the other avenue of approach, so to speak, and time and again repeated high colonic irrigation has resulted in marked betterment of the cerebral disturbance, which is gradually disappearing almost completely. This, of course, is a very common experience.

It must be borne in mind, however, that a serious manic-depressive psychosis sometimes may be precipitated in patients of previously unstable mental equilibrium by the attempted removal of a source of focal infection which has gained considerable headway. I have met with two recent striking examples of this. One was of a woman of sixty years who became profoundly unbalanced, with extreme mental depression, insomnia, delusions, apprehensions and active suicidal tendency, a few days after a radical tonsillectomy. The other patient, a woman of fifty years, had acquired a condition of generalized sepsis through long-continued neglect of her teeth. A half-dozen periapical abscesses were associated with necrosis and extensive pyorrhea. A few days after removal of the teeth and cleaning out of the necrotic areas she exhibited a delusional hystero-psychosis with suspicious apprehensions and attempted suicide through starvation. Six months' sanatorium treatment were required before complete recovery resulted, but this has lasted now for nearly three years.

In such persons it seems probable that the operation for removal of the foal infection which heretofore had contributed to only vague

mental symptoms, results in suddenly overwhelming the system with a degree of added toxæmia which precipitates a mental crisis that would have been inevitable, although longer delayed, without operation.

The possibility of focal infections in the alimentary canal giving rise to serious systemic symptoms, notably nutritive disorders and extreme grades of anæmia, cannot reasonably be doubted. The numerous types of pathogenic bacteria recognized in focal infections in the mouth, on being swallowed, may set up foci of infection in the stomach, large and small intestine, appendix or common duct, but in a given ease it is well-nigh impossible either definitely to prove the exact primary source of infection or the exact nature and extent of the invisible lesions in the alimentary canal. Hence there is ample field for the discussions of theorists which range all the way from extreme conservatism to the advocacy of extirpation of the colon as a cure-all. Moreover, it is difficult in many cases of systemic symptoms, such as joint inflammations and nerve disorders, to differentiate between the effects of a bacteremia and a toxæmia due to absorption of ordinary indigestion products and waste material. Discussing the subject James Ewing has said:

"The isolation of various bacteria from the mesenteric lymph nodes does not appear to have particular significance, since bacteria pass the relatively intact intestinal wall under a great variety of pathologic conditions, many of which have no connection with the clinical state of these patients. More important is the demonstration of hernias, pouching, thinning of wall, pigmentation and ulceration of the mucosa, which together form an impressive anatomic basis for the theory of intestinal intoxication, which undoubtedly exist in severe degree in cases exhibiting such lesions."

In this connection it is interesting to note the excellent results in grave operations involving the alimentary canal which follow, whenever time permits, securing asepsis of the mouth through dental treatment, a method lately instituted at the Mayo Clinic and now increasingly used elsewhere. This practice not only admits the possibility of previous relationship between foci of infection in the mouth and the alimentary canal, but checks the rapid progress of dental lesions in those who are weakened by serious operations and, furthermore, are unable to take adequate care of the teeth during protracted convalescence.

With regard to the treatment of focal infections there are several features which should be emphasized strongly. In the first place, diligent search should be made for the original focus, bearing in mind that there may be more than one such source of infection present. Particularly is this true with regard to the varied

generalized infections arising through neglect of the teeth. It is absolutely impossible to make a complete and thorough diagnosis of the dental condition without radiographs, and whatever dental work is carried out with the view of eliminating foci of infection should be followed up by repeated radiography. To this end there should be much closer coöperation between physician and dentist than at present often exists. It is my custom always to inform the dentist of a suspected relationship between systemic symptoms and dental diseases, and to insist that radiographs of the condition found be returned to me for information, and further, where undesirable conditions are present, to emphasize to the patient the importance of at least yearly radiography of the teeth. The process is relatively inexpensive and the few minutes required for the performance may save as many weeks and months of temporizing with symptoms which may be capable of prompt relief. I do not advocate promiscuous tooth extraction merely on account of a suspicious radiogram, but the point is to establish such coöperation with the dentist as may prevent further insidious extension of a lesion before it is too late. Mouth infection of any kind, whether arising through disease of the teeth or tonsils, frequently results in various digestive disorders and it may be difficult to determine in a given ease whether the systemic symptoms are referable to an actual focal infection or due rather to a toxæmia arising from the alimentary canal. In such cases attention to digestion and intestinal asepsis is highly important, the latter to be obtained through such remedies as catharsis, the so-called intestinal antiseptics, such as erosote, salol, beta-naphthol, etc., and especially through thorough colonic irrigation.

In cases in which an extreme degree of anæmia and other symptoms of profound general sepsis have resulted, it is a serious error to rely alone upon the long practiced method of administering iron and arsenic and particularly the present fad of giving hypodermatic injections of eacodylate of sodium or other remedies supposed to improve the blood composition. This treatment in my experience rarely if ever offsets the inroads of constant reinfection from a focal source, or brings the blood back to normal composition after an extreme degree of anæmia has been reached. In such cases blood transfusion should be practiced, but it must be emphasized that this is an exceedingly expert procedure. Blood from a donor of an even slightly differing type from that of the patient may do more harm than good and, furthermore, a single transfusion is not enough, but the effects of transfusion should be checked by repeated blood examination, for immediate benefit is often transient whereas transfusions several times repeated at proper intervals of a few days and pos-

sibly with a gradually increasing quantity of blood may within a few weeks bring the patient's blood up to a nearly normal standard, which he is capable of maintaining.

We have left the further means of treatment through administration of autochthonous vaccines where material is obtainable from which to make them. This again is an exceedingly expert procedure and often fails through lack of skill in obtaining and making the original germ culture. I am aware that there is much scepticism regarding the value of this treatment. Having had it myself some years ago following a nearly fatal septicæmia, I am naturally prejudiced in favor of at least trying it, and I have seen several cases like one previously referred to in which it seems to have controlling effect. On the other hand, I have never witnessed any serious trouble from the careful and expert employment of this method.

I do not wish to overemphasize the influence of focal infections in producing *all* of the manifold diseases to which I have referred, many of which, particularly those of the joints and nervous system, may have other origin, as in toxæmias, endocrine disturbances, etc., but with increasing attention to the widespread possibilities of systemic symptoms arising through focal infections, the matter is one which deserves most careful consideration, and should never be lost sight of in obscure conditions.

DISCUSSION.

DR. E. A. BATES, Springfield: When we consider the possibility of focal infections, and when we know that one-fifth of all mortality comes from diseases of the respiratory tract, and from two infections, namely,—pneumonia and tuberculosis, each with a mortality of one-tenth,—it becomes pretty evident to us that the great disease is the infections of the respiratory tract; so that it has always been my feeling, in this search for a focal infection as a cause of systemic disease, that the respiratory tract has possible secondary infections of its lower passages, through its upper which serve as an infection for the general system.

As I have gone on with that impression, I must confess that I have been more inclined to the thought of the tonsils than to the thought of the teeth, without wishing to minimize any consideration that may be necessary with regard to teeth; and it seems to me that one must be very careful in attempting the analysis of x-ray pictures of the teeth, as possibly resulting in the more or less complete destruction of those very important members in our mouth.

I have become more and more impressed that the tonsil is the great point of entrance to the lymphatic system and has its connection with systemic things like chronic arthritis, chronic

myositis, etc. One must use careful consideration in an examination in questioning the necessity of the removal of the tonsils, or in advising the patient to have them removed. In order to reach such a reasonable conclusion, or to give such advice to the patient, it is necessary for the practitioner to inquire as to the patient's rheumatism, how long he has been afflicted, in what joints and muscles, whether the teeth are involved, whether the rheumatism was preceded by attacks of tonsillitis, and if the tonsils have already been removed. It has seemed from those who have observed the connection between tonsillitis and rheumatism, that adult rheumatism is most common after the age of thirty; the patient is afflicted with it for ten or twelve years, and the knees are the most prominent of the joints affected. In a small proportion of these cases, bad teeth have been discovered. The patients have had attacks of tonsillitis in about 50 per cent. of the cases of rheumatism and in about 1/5 tonsillectomy has been performed. All of which, generally speaking, shows that the stump of a removed tonsil may have a great deal to do with an attack of rheumatism; so that I have come to believe that throats imperfectly operated for tonsillitis are perhaps more hazardous and dangerous, than throats which have been neglected in suspected chronic tonsillar infection. The tonsil need not be a large one, its activity as a focus, however, must depend entirely upon the character and condition of its crypts. These may be infected without even a history of tonsillitis.

I have been led to wonder about the connection between the infected tonsils and the thyroid gland, which, in its over-activities and in the occurrence of the thyroid condition, would almost seem to lead to the belief that it was foolish to entertain the question of infected tonsils in connection with the thyroid body. At the same time, so often in the thyroid state in the adult or late adult life, there is an endocardial condition, damaged valves, etc., that the connection between tonsillar tissue and the thyroid, in individual cases may reasonably be considered. And recently,—I am sorry I cannot give you the result of these two cases, but the time is too short,—I have advised removal of tonsils in two cases of active thyroids in young adult life. I feel that focal infection is very, very important, and I am sure I voice the feeling of this meeting in thanks to Dr. Thompson in bringing it so forcibly to our attention.

DR. F. M. RACKEMANN, Boston: I would like to emphasize what Dr. Thompson said about care being used in search of focus. This patient I have in mind, Mary S., had asthma pretty steadily every week for two years. During these two years, she had several teeth removed, her septum straightened, and her antrum punctured.

One man wanted to take out more teeth. During her two weeks' stay in the hospital she had constant severe asthma and required at least three doses of adrenalin in every twenty-four hours. Finally, however, she came under the observation of Dr. C. T. Porter, who advised that the x-rays be repeated. These were taken and the new x-rays showed definite trouble in her frontal sinus. She underwent the Kilian operation, and since that time,— $1\frac{1}{2}$ years ago,—she has had only two slight attacks of asthma. She illustrates the fact that foci may be multiple and it does make a difference whether you get the right one or the wrong one.

SYPHILIS WITH A NEGATIVE WASSERMANN REACTION.

BY C. MORTON SMITH, M.D., BOSTON.

A POSITIVE Wassermann reaction from a carefully supervised laboratory should be accepted as the best single symptom of syphilis that we now possess. However, like most single symptoms, it requires interpretation in conjunction with the history and clinical findings.

Soon after Wassermann, in 1906, applied the principle of fixation of the complement in the diagnosis of syphilis, it was recognized that this reaction was not a specific test for syphilis as it was found that certain other diseases or conditions yielded a fairly high percentage of positive results—thus proving it to be a *non-specific* test for syphilis.

In carrying out the early reactions only an antigen from syphilitic material rich in treponema was employed. The liver from a syphilitic fetus was thought to produce the best preparation. Soon it was discovered that the same results could be obtained by the use of non-luetic antigens. Later it was shown that many undoubtedly cases of syphilis failed to give positive tests with an alcoholic extract and the antigen was fortified with cholesterol. This procedure materially increased the number of positive results so that fear was expressed lest the test become too delicate and syphilis be reported where it did not exist. With the false positive reactions we are not now concerned—only the false negatives.

Faulty technic has been ascribed as the greatest factor in producing false reports. Based on work done during the war on a large group of routine Wassermanns on blood from naval aviators, Dr. Hinton, Director of the State Wassermann Laboratory, estimates that the "normal" percentage of technical *false positives* is not over one-half of one per cent, this being the result of tests on 3750 men between the ages of 18 and 28 years, supposed to be healthy and non-luetic. In spite of all that has been done to

simplify and standardize the Wassermann technic the use of more delicate antigens by different laboratories still gives us reports that show a fairly wide range of variation. These variations in results form the basis for believing that each patient should receive a thorough clinical examination as well as serological.

A careful review of the history and physical findings in connection with the serological examinations has shown that certain groups of known syphilitics consistently yield a certain number of negative Wassermann reactions. These cases may be grouped as follows:

1. Early primary syphilis.
2. Late syphilis—This to be divided into—
 - a. Latent.
 - b. Cases with sharply localized areas of activity—*e.g.*, uveitis, keratitis, ulcerations on skin and mucous membranes, aortitis, etc.
 - c. Tabes—with negative blood and positive spinal fluid.
 - d. Late lues simulating malignancy.
 - e. Ataxia and bladder symptoms with negative blood and spinal fluid.
3. Early infancy (results are notably unreliable).
4. Late congenital, with active skin lesions—periostitis, interstitial keratitis, etc.
5. Certain cases under active treatment with mercury and arsphenamine.

It is definitely known that a certain time must elapse, usually three or four weeks, after the appearance of the primary lesion before the blood Wassermann becomes positive. Including the period of incubation this would mean six or seven weeks after inoculation.

Not more than 1/3 of the cases of primary syphilis at the end of the first week can be expected to show a positive Wassermann and 70 per cent. at the end of the third week. Most cases show a positive blood *before* the appearance of secondary eruptions. These figures are mentioned because we still see cases with a perfectly typical primary chancre, and so proved with a dark-field microscope, in which syphilis has not been recognized because of a single negative Wassermann reaction.

Early primary lesions, untreated with mercury, should yield approximately 90 or 95 per cent. of positive results by dark-field examination and only a small percentage of positive Wassermann reactions.

The importance to the patient of a positive diagnosis of syphilis at the earliest possible time leads me to mention here the possibility of obtaining a positive Wassermann reaction within the first week on serum obtained from the primary lesion itself. The local use of any mercurial prevents the possibility of demonstrating treponema with the dark-field. Such treatment,

however, does not interfere with the *local* Wassermann reaction. Only .1 or .2 c.c. of serum is necessary for making the test. This amount can usually be obtained by squeezing the lesion or by suction and the serum collected in a capillary tube. The presence of blood does not interfere with the performance of the reaction. This simple procedure is worthy of more frequent use.

There are patients with latent syphilis on whom the Wassermann test is negative. They may also be without symptoms, *e.g.*, certain mothers of congenitally syphilitic babies. A late syphilitic may show characteristic syphilitic lesions too small in extent to produce Wassermann bodies or for some other reason fail to show a positive blood Wassermann. In this group are occasional cases of syphilitic inflammation of uveal tract—vitreous opacities—choroiditis—keratitis—periostitis and less often aortitis. Then one sees large or small late papular or ulcerating lesions of the skin where the diagnosis is positive clinically and verified therapeutically—but the Wassermann remains repeatedly negative.

It is well recognized that many tabetics with characteristic findings in the spinal fluid of active disease show a persistently negative blood Wassermann and some of the cases of clinical locomotor ataxia with complete negative serology may show a surprising amount of benefit from treatment not necessarily of the intensive sort.

It is definitely known that the Wassermann reaction on the blood of young infants is entirely unreliable. A woman with a positive Wassermann may give birth to a baby with a negative reaction. Infants may show a negative blood at birth while the placenta may be syphilitic and the reaction later may become positive, the baby later showing clinical manifestations of the disease.

Again, one sees infants with negative blood Wassermann born of parents with positive blood. Shall these children be treated as potential congenital syphilitics and subjected to regular treatment or shall they be kept under observation and their blood and spinal fluid tested for assurance of safety, in the absence of clinical manifestations?

I believe in keeping them under observation subject to frequent tests and treatment from time to time with mercury or arsphenamine as indications arise.

In late congenital syphilis one encounters conditions similar to those found in the late acquired disease. We see cases of interstitial keratitis showing other stigmata—deafness, periosteal thickenings, dental defects, etc., but with negative blood; conditions which respond to anti-syphilitic treatment. Furthermore other

children in the family may also show stigmata and perhaps positive bloods.

Some of these late congenitals show repeated outbreaks of ulcerations characteristic of late luetie lesions—either gummosus or ulcerating nodules on the skin which respond only to anti-syphilitic treatment. The fact that the blood Wassermann in these cases is negative has frequently led to an error in diagnosis—the condition on the skin usually being considered due to tuberculosis. Several such cases failed to respond until anti-syphilitic remedies were employed.

Another group is made up of cases with late lesions on mucous membranes of mouth, throat or rectum. A recent case showed a flat ulcerated surface in the rectum with marked smooth infiltration about it and the mass large enough to produce a partial stricture. The Wassermann reaction on the blood and spinal fluid was negative. Biopsy from the ulceration showed only chronic inflammation—no evidence of malignancy. The patient was seen by Dr. Greenough, who made a clinical diagnosis of probable syphilis and referred the case for a therapeutic test. The patient, a widow of 50, had been an experienced nurse. She had no knowledge of a genital or extra-genital infection or secondary manifestations. However, three years before, she had received a series of intravenous injections of arsphenamine for a chronic scaling eruption of arms and legs which disappeared under this treatment, leaving no stains or scars. She said her blood test showed "bad" when the treatments were begun and "good" afterwards. Search of the records of the hospital where the injections were given failed to show a diagnosis and no reports on Wassermann reactions were recorded. On the strength of Dr. Greenough's clinical experience, believing that it was not malignant disease or tuberculosis, it was thought to be luetie. She was given arsphenamine with marked improvement in weight and color as well as benefit to the ulceration. After three intravenous injections her Wassermann reaction had become strongly positive.

This case proves there is still need of careful clinical observation. Results of laboratory examinations are often of great value to supplement or substantiate the clinical findings. Such help should always be obtained if possible.

Another group of cases where negative serology sometimes occurs comprises patients with ataxia and bladder symptoms or cases with gastric crisis with entirely negative serology on blood and spinal fluid. There are cases in which the active inflammatory process has almost or entirely burned itself out but in which nevertheless benefit sometimes results from careful treatment.

Finally there are certain cases under active or recent treatment with mercury and arsphen-

mine where the blood Wassermann is negative. A few years ago it was believed that mercury in small amounts would negative the test. This has largely been disproven. To prevent this possibility we wait from four to six weeks after finishing a course of treatment before examining the blood.

In addition to the conditions enumerated of syphilis with a negative Wassermann there are doubtless others unknown or overlooked. Syphilis can never be studied or treated in groups; each case presents individual problems which must be met as such, applying modified general rules to suit the actual needs.

The taking of blood for a Wassermann reaction should be part of a complete physical examination—like a routine urine analysis or blood pressure observation, the results to be studied and interpreted with the history and physical findings. Unsuspected positive reactions in supposedly healthy people vary from 0 to 10 or 20 per cent., race, environment and social status playing important parts as determining factors. Urban always shows an increase over rural population.

The question may be raised if this practice of a routine Wassermann is worth while when without it only a possible 2 or 3 per cent. would be overlooked. But for those few individuals it is 100 per cent. failure. With a positive Wassermann as a basis, incipient nerve, vascular or visceral changes hitherto unsuspected may be detected in time to derive benefit from the application of appropriate treatment.

INSULIN, DIABETES, AND THE GENERAL PRACTITIONER.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

INSULIN is a test of the intelligence of the general practitioner. If he gives the correct dose, great good to the patient results, as shown by increase in weight, strength, and spirits. If he gives too large a dose, danger follows, because along with the lowering of the blood sugar which insulin produces, serious symptoms develop: weakness, hunger, sweating, tremor, unconsciousness, death. Such are the symptoms which are known as an insulin reaction. On the other hand, if the diet is increased with the help of insulin and later the insulin omitted, the patient is exposed to death by diabetic coma, because then he may not be able to burn enough carbohydrate to prevent the development of acid poisoning out of the additional fat which he has been allowed.

The proper dose of insulin is not so easily determined as that of morphine. In the ease of morphine the doctor intuitively decides whether $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ grain is needed, and the relief or

otherwise of the pain shows whether his judgment was correct. Not pain but excess of sugar in the blood or the presence of sugar in the urine is the indication for insulin. A chemical test is required. An examination of the blood sugar is desirable and helpful when insulin is used, but if this is impracticable excellent results can be obtained by performing very frequent tests of single specimens of the urine. Have a blood sugar test if you can, but don't deprive a diabetic of insulin because a laboratory is not at your door. If the urine is sugar free, more insulin is not required until before the next meal. If the urine is sugar free, the question will arise: have you given too much insulin? Fortunately this can be answered in two ways: (1) the determination of the percentage of sugar in the blood, and (2) the symptoms of a reaction above mentioned.

A knowledge of the carbohydrate forming material of the patient's diet is essential in order to prescribe insulin safely. Insulin burns up carbohydrate at the rate of 1.5 grams more or less per unit. If the patient cuts his carbohydrate in half but continues the same dose of insulin, there will be left no carbohydrate for it to work upon and the blood sugar will fall until a reaction may occur; if the patient doubles his quantity of carbohydrate, the insulin will not take care of it and the sugar will come back in the urine. The doctor and the patient, therefore, must learn the carbohydrate in the diet and the patient must eat the same quantity each day or take the consequences. Insulin is a test of their intelligence.

Insulin will never be a success in the treatment of diabetes without the aid of the general practitioner. He must treat them. There are too many to be admitted to hospitals, and, even if they could be admitted, when they are discharged they must be guided by their own physicians. Then, too, most diabetics are too mild to go to a hospital. Most diabetics are earning a full day's pay. They must stick to their jobs at home. For severe cases, and these number less than ten in each hundred, hospital is advisable, and unless the family is very intelligent or a diabetic nurse is available, and the doctor skilled and willing to devote a great deal of time to the patient, hospital drill is essential. But the great mass of diabetics must be treated in their own dwellings by their own physicians.

Opportunities for doctors to acquaint themselves with the use of insulin and the diabetic diet must be afforded; they must be given a chance to see for themselves how patients can be treated with insulin and diet. With the knowledge and consent of the President and Superintendent of the New England Deaconess Hospital the following proposals are made:

1. The New England Deaconess Hospital will

offer to doctors courses in the treatment of diabetes with and without insulin. The course will commence next week, will last 4 days, and will be repeated weekly, if there is a demand for it, for one year. On Tuesdays, Wednesdays, Thursdays, and Fridays, there will be a lecture, clinic, or food demonstration, beginning at 10 A.M. for one hour. During the next hour the treatment of individual patients will be discussed. In the afternoon, for those who desire more detailed instruction in laboratory work or the diet, facilities will be offered, ending at 4 P.M. There will be no fee for the lectures, the laboratory instruction, or the instruction in the diet.

The New England Deaconess Hospital is fortunate in having the coöperation of Dr. Reginald Fitz, who will conduct a part of the teaching by means of his diabetic service at the Peter Bent Brigham Hospital. In this way different methods of treatment will be taught. Others who will take part are Dr. F. G. Brigham, Dr. H. F. Root, Dr. D. L. Sisco, and myself. Extra assistance will be given the nursing staff at the Deaconess Hospital so that one or more nurses can help in the afternoon teaching, and the same is true of the laboratory staff. If a physician has not the time to take the 4-day course he will be welcomed at the lectures and we shall try to prove that even in one hour some little helpful hint for treatment can be given.

Nurses and dietitians are welcome to attend the 10 o'clock exercises.

2. The New England Deaconess Hospital will offer a course in diabetic nursing to nurses and dietitians from other hospitals. This course will last as a rule 1 month, but under certain circumstances a longer or shorter time. Nurses taking the course will be assigned work and be expected to work with diabetic cases. They will be taught the routine laboratory tests advantageous to diabetic nurses and will be given time to attend all lectures. Four nurses can be accepted in July.

There will be no fee and no charge for board.

3. The New England Deaconess Hospital will send upon request one of the physicians above mentioned to any County Society of the Massachusetts Medical Society, to any hospital in Massachusetts, to any group of twenty or more doctors in the State to give a talk on the practical treatment of diabetes with insulin.

4. The New England Deaconess Hospital, in coöperation with Dr. Reginald Fitz, of the Peter Bent Brigham Hospital, will conduct a weekly Question and Answer Diabetic Column in the BOSTON MEDICAL AND SURGICAL JOURNAL, the official organ of the Massachusetts Medical Society.

5. Through a gift of a sum of money from the John Chatillon Company of New York City,

the New England Deaconess Hospital has secured the promise of 1000 John Chatillon 500 gram scales. By the terms of this gift these scales are hereby offered, one each, to 1000 hospitals and doctors in Massachusetts at \$5.50 instead of at the retail price of \$10.

When this paper was presented, I was not allowed to state that through the courtesy of Mr. John D. Rockefeller, Jr., a gift of \$10,000 had been received by the New England Deaconess Hospital "(1) to increase the number of free ward patients who may be treated with insulin, and (2) to teach physicians in general practice the proper method of employing insulin in the treatment of diabetes." Dr. Simon Flexner, acting for Mr. Rockefeller, consented that a portion of this sum should be used for a dietitian at the Peter Bent Brigham Hospital, a dietitian and technical assistance at the New England Deaconess Hospital to allow the staff more time for teaching, and part-time technicians for Prof. Otto Folin at the Harvard Medical School and Prof. Frank B. Mallory at the Boston City Hospital to further their investigations upon diabetes and insulin. Free insulin, or insulin at a reduced price for those who require it, is being furnished from Mr. Rockefeller's gift to the Boston City Hospital, the Massachusetts General Hospital, the Peter Bent Brigham Hospital, and the New England Deaconess Hospital.

DISCUSSION.

DR. A. K. BOOM, ADAMS: The Doctor's paper seems possibly to a lot of us as though it was a very simple matter to treat a diabetic patient with insulin. To me, I do not think the general practitioner should be given the full control in regard to giving insulin. I think it would be a fine idea if we had some institution in this county whereby we could take our patients for a blood sugar test, find out from the laboratory the amount of insulin the patient should have, and then feel our way along, and in another three months, say, have another sugar test. Of course, the patients are trained to examine their own urine, but they can't take their own sugar test and neither can the general practitioner, because he has not the time to do it. I think the idea of the Doctor in regard to having a school in Boston, is an ideal one, where several doctors throughout a county like this could adopt the system and keep track of the patients.

Here is a little diabetic patient of mine whom I would like to show. Possibly she knows more about diet, insulin, fats, carbohydrates, and proteins, than the rest of us—outside of the doctors! She was one of the first cases to use insulin. Her mother was taught the administration of insulin, she keeps her needle sterile, and I think the child has gained 50 per cent. in

weight. The mother's technique is so good that the child has had but two small abscesses, which, under treatment by hot compresses, have healed up nicely.

DR. REGINALD FITZ, Boston: It is a great pleasure to be asked to discuss Dr. Joslin's paper because, as usual, when he talks about diabetes he covers the ground so thoroughly that he leaves but little further to be said. During his talk I have been able to think of only one thing to say. About ten years ago Dr. Joslin stated that the Allen treatment had largely taken the "die" out of diabetes. Subsequent experience has confirmed the truth of this statement. Now, as Dr. Joslin has pointed out, we are at the beginning of a new era of diabetic treatment. Having heard his paper, it seems to me that it is up to all of us to learn from him not only how to keep the "die" out of diabetes, but also how to put the "in" into insulin. We can do this to best advantage by following out the plan of campaign which he has outlined.

DR. F. GORHAM BRIGHAM, Boston: I agree with all Dr. Joslin has had to say, but there is a problem which I would like to speak of before this meeting, and that is the handling of the 90 per cent. of diabetics who perhaps do not at the present time need insulin as urgently as the 10 per cent. who do, until we are all educated sufficiently to handle them properly.

I would like to report the work in the clinics in Boston, especially at the Massachusetts General Hospital. At present, there are 1,200 diabetics on the list who are not being treated with insulin; this number is being increased every week; we are swamped with new cases. The patients are coming, being told that they need insulin, and are assured of almost an immediate cure. Ninety per cent. of the diabetics who came into the clinics previous to insulin have done very well without insulin. They improved and were able to keep on with their work. Many old cases doing well had returned hurriedly to the hospital only because they had been told they needed insulin. If 90 per cent. can do fairly well without insulin, I think these cases can be handled without being sent to the hospital for the present anyway. If 11 units are necessary for severe cases, then small doses can be used by the general practitioner safely if he followed the dietary scheme Dr. Joslin has outlined. I agree that the large majority can be treated by the general practitioner, with or without insulin, because we have been able to accomplish it with the most ignorant cases at the Massachusetts General Hospital.

Book Review.

War Blindness at St. Dunstan's. By SIR ARNOLD LAWSON. Oxford Medical Publications. London: Henry Frowde and Hodder & Stoughton. Pp. 148. Price, \$2.50.

St. Dunstan's was started in 1914, and this is a general review of the cases there between that date and May, 1920. Total number of traumatic cases comprise 66 officers and 1268 non-commissioned officers and men. There were 489 non-commissioned officers and men blinded from non-traumatic causes. Eighteen months after the armistice the total number of those blinded was estimated at 1833, and disease was responsible for 26% of these.

Part I of this book deals with cases of traumatic blindness. Notable absence of sympathetic disease is commented on. There were no cases observed after the original injury, though a few developed after operative procedures. Shell fragments and bullets are aseptic, and wounds made by them healed quickly and without much reaction. Many shrivelling stumps of this nature were left in, which caused no trouble. Cases with complications in the accessory sinuses caused endless trouble. Traumatic cases included a great many choroidal ruptures. There were 72 cases of through-and-through bullet wounds of the orbit. In many cases the optic nerve was severed. Through-and-through wounds caused 17% of the blindness from trauma. Notes of many characteristic cases are given.

Fracture of the skull,—in the fracture of the skull causing blindness, in 17 cases the occipital regions were affected. Various field changes are spoken of. Unfortunately, it was impossible to work up this very interesting class of cases completely. Two cases showed the paracentral loss so well described by Lister and Holmes and various French writers, which is very disabling, although the central vision may be normal. It is too bad that more exact descriptions of these field changes could not be given. No charts are published. There were 12 cases of skull fracture other than occipital, mostly smashing blows in the frontal region. Blindness was produced in a variety of ways,—direct smashing of the eye, injury to orbital contents by fracture of the walls and hemorrhage, thirdly by concussion. There were 16 cases of concussion blindness, which is so well pictured in the various war atlases. One case, however, is of special interest. This man was knocked down by a shell explosion and both eyes destroyed. Except for this he bore no evidence of external or internal injury. Lawson believes this was due to concussion, but the complete evidence is lacking. A very large number of interesting miscellaneous injuries are then presented.

Part II deals with non-traumatic blindness, and opens with some general reflections. It is not advisable to accept for service anyone whose defective disease is due to old inflammation of the uveal tract. This is also true in the case of one defective eye, especially when the patient is the subject of syphilis, chronic gonorrhœa, or the rheumatic affections. All cases of retinitis pigmentosa and chorio-retinitis should be excluded from service, and for this purpose an ophthalmoscopic examination of every candidate should be made, if only for the purpose of saving disability pension to the State. Military life is particularly apt to cause a rerudescence of some existing disease.

Then follows a detailed consideration of the cases of non-traumatic blindness. Lawson takes the reasonable position in regard to disability pensions, that if a man loses his sight in the service it is not for him to prove that service was the cause, but for the State to disprove it. The cases cited are such as those we meet in civil life and comprise a large variety of conditions, and a considerable portion of the book is given over to them.

Part III contains a chapter on disability pension and one on re-education. Lawson points out the greater difficulty in educating those who have previously had sight than in educating a blind child. Up to 40, theoretically, all should be trainable; between 40 and 50 a few; and after 50 only the exceptional person. The degree of reeducation in the different groups must depend on the person's intellectuality and on his mental attitude. Those who lost their sight suddenly are more difficult to reeducate than where the vision disappeared slowly. It is much easier to reeducate in an institution where all are suffering from similar difficulties. The importance of physical exercise and sports cannot be overestimated.

The experiments and experiences at St. Dunstan's are most interestingly described by the writer, and the book well repays reading.

WEEK'S DEATH RATE IN BOSTON.—During the week ending August 11, 1923, the number of deaths reported was 150, against 154 last year, with a rate of 10.15, against 10.51 last year. There were 18 deaths under one year of age, against 30 last year. The number of cases of principal reportable diseases were: Diphtheria, 39; scarlet fever, 23; measles, 28; whooping cough, 12; typhoid fever, 4; tuberculosis, 19. Included in the above, were the following cases of non-residents: Diphtheria, 6; scarlet fever, 5; whooping cough, 2; tuberculosis, 2. Total deaths from these diseases were: Diphtheria, 1; scarlet fever, 1; whooping cough, 2; tuberculosis, 15. Included in the above were the following cases of non-residents: Whooping cough, 1; tuberculosis, 1.

Current Literature Department.

ABSTRACTORS.

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CONCERNING THE ANTISEPTIC ACTION OF SOME BENZYL COMPOUNDS.

MACHT AND HILL (*Johns Hopkins Hosp. Bull.*, May, 1923) summarize as follows their investigations of the bacteriological study of various benzyl compounds:

1. A bacteriological study of the effect of various benzyl compounds was made on *Staphylococcus aureus*.
2. It was found that all of these exhibit more or less a germicidal and antiseptic effect; benzyl alcohol and benzaldehyde being the most potent in this respect.
3. This property of the benzyl compounds throws light on certain successful empirical usages of a number of drugs.
4. The antiseptic power of benzaldehyde and benzyl alcohol is much more powerful than that of some other drugs employed as throat antiseptics.

[J. B. H.]

THE BLOOD PICTURE OF UNCOMPLICATED PELLAGRA.

HUCK (*Johns Hopkins Hosp. Bull.*, May, 1923) makes the following conclusions as the result of his detailed investigations of the blood in pellagra:

In all stages of uncomplicated pellagra the blood picture shows a secondary type of anemia with a normal leucocyte count. The differential formula shows an increase in lymphoid elements, when the symptoms are severe. When the symptoms have subsided and the patient is in the convalescent stage, the polymorphonuclear eosinophils are increased. The platelet counts are normal.

Intestinal parasites and skin lesions play no part in the eosinophilia.

Eosinophilia augurs a favorable prognosis.

[J. B. H.]

SYPHILIS OF THE UTERUS AND ADENEXA.

POTTS, B. (*Surg., Gynæ., and Obstet.*, July, 1923), states that syphilis of the body of the uterus is rare. For most of the lesions which have been described as luetic, the specific character has not been definitely established and appears doubtful. Gummata have been reported; these lesions may probably be accepted as luetic, in spite of the fact that treponemas have not been demonstrated in them.

A case of early diffuse syphilitic involvement of the body of the uterus is described. The character of the process was established by the presence of the specific organism in the cellular tissue which separates the muscle bundles.

The lesion of the body was apparently secondary to a chance of the cervix. Involvement of the body probably occurred by direct interstitial invasions from the primary lesion.

Adnexal lesions, the syphilitic character of which has been definitely proven, are even rarer than those of the body of the uterus. Chronic vascular and diffuse fibrotic processes have been reported as of luteic origin, but most of these must be excluded because of lack of evidence.

In the case reported, corpus luteum and the surrounding stroma of the ovary were the seat of lymphocytic infiltration. Treponemas were present in this tissue, establishing the specific character of the inflammatory process.

That the involvement of the body of the uterus and of the ovary occurred early is indicated, not only by the cellular character of the inflammatory reaction, but also by the development of typical secondary cutaneous syphilides seven weeks after the onset of the first local symptoms. The blood Wassermann reaction was strongly positive when the skin lesions appeared. The age of the patient, a previously normal child-bearing history, vaginal bleeding, and the gross appearance of the cervix on direct visual examination led to a diagnosis of epithelioma of the cervix.

[E. H. R.]

PLACENTAL IRON AND ITS RELATIONSHIP TO ICTERUS NEONATORUM.

WILLIAMSON, A. C. (*Surg., Gyn., and Obstet.*, July, 1923), states that all newborn infants have bilirubinemia corresponding to the iron content of the placenta.

There is a definite relationship between icterus neonatorum and placental iron content—the greater the placental iron content, the greater the clinical jaundice.

Jaundice of the newborn may thus be considered as purely dynamic or hemolytic in origin.

The non-icteric infants, all of whom, nevertheless, have a certain degree of bilirubinemia, are without jaundice because their placental iron content is below the level necessary for the appearance of jaundice.

[E. H. R.]

FATAL ANAPHYLAXIS FOLLOWING BLOOD TRANSFUSION.

CARRINGTON, G. L., AND LEE, W. E. (*Annals of Surgery*, July, 1923), report one case in detail in which a fatal outcome was the result of transfusion. They also cite numerous other cases mentioned or reported by other authors, and endeavor to analyze the conditions which precede such a result. No very definite conclusions are drawn, but the article is timely in the warnings against indiscriminate employment of this method without proper safeguards.

[E. H. R.]

PLEURAL EPILEPSY.

OWEN, H. R., AND GONZALEZ, A. (*Annals of Surgery*, July, 1923), write as follows:

Pleural epilepsy is an epileptiform manifestation occurring when the pleural membranes are stimulated by either physical or chemical agents. It occasionally complicates the surgical treatment of empyema.

The pathology of the disease is obscure. Necropsies have not enlightened us on the subject.

The reflex theory offers the most satisfactory explanation. The reflex action is by way of the pneumogastric (the sympathetic may be involved).

It occurs in patients without previous history of convulsions. Age and race show no susceptibility, but apparently occurs more frequently in men. Low blood pressure predisposes to a fatal termination. Its occurrence does not predispose to idiopathic epilepsy.

The prognosis is guarded. Death occurs in about 35 per cent. of the cases.

Careful use of non-irritating solutions may prevent the attack, while strong sedatives and vasoconstrictors are useful during the attack.

In writing this brief review of the subject it has been our aim to remind the practicing physician, as well as the surgeon, of this epileptiform manifestation, which is not rare and not devoid of danger, and which may complicate the surgical treatment of empyema, or even paracentesis of the chest. We would like to emphasize the importance of blood pressure readings to eliminate cases of low blood pressure, and the therapeutic value of adrenalin, pituitrin, luminal, and morphine in the treatment of pleural epilepsy.

[E. H. R.]

FRACTURES OF THE FEMUR IN CHILDREN. TREATMENT AND END-RESULTS IN 268 CASES.

BURDICK, C. G., AND SIRIS, I. E. (*Annals of Surgery*, June, 1923), believe that fractures of the femur in children are almost invariably followed by a good functional result. A satisfactory anatomical reduction is not essential for perfect function. In our experienced children up to the age of six are best treated in a Bryant frame. Over six, plaster spica with traction.

Suspension treatment in a Hodgen or Thomas splint is not practicable except in compound fractures, simple fractures with laceration, or severe trauma to adjacent tissues, where the administration of an anesthetic is contraindicated and when skeletal traction is to be employed.

The majority of cases which are disengaged with shortening will be spontaneously corrected within one to two years.

A certain number of cases, irrespective of the form of treatment, will be followed by a lengthening of the fractured side.

An open reduction is rarely indicated, as skeletal traction will almost invariably correct any marked deformity.

[E. H. R.]

SURGICAL RELATIONS OF THE SYMPATHETIC NERVOUS SYSTEM.

MULLER, G. P. (*Annals of Surgery*, June, 1923), rather briefly reviews the literature regarding surgical procedures in relation to such conditions as epilepsy, goiter, glaucoma, optic atrophy, parotid fistula, angina pectoris, and conditions affecting the circulatory system, including Raynaud's disease, acrocyanosis, causalgia. This article is in the nature of a brief review and advances nothing new in regard to the surgery of these conditions.

[E. H. R.]

HAEMANGIOMA OF THE INTESTINE.

HELVESTINE, FRANK, JR. (*Annals of Surgery*, July, 1923), writes as follows:

Haemangiomas may occur in the intestinal submucosa, between the circular and longitudinal muscle layers, or under the serosa. The angiomas may be either simple or cavernous in type. The cavernous angiomas may be either solitary or multiple. Most angiomas arise in the submucosa.

Angiomas may give rise to intestinal or intra-abdominal hemorrhage, or to intestinal obstruction. Obstruction may be due to the size of the tumor or to intussusception. Hemorrhage from an angioma situated high up in the small intestine may be confused clinically with bleeding from a duodenal ulcer. Bleeding from an angioma of the sigmoid or rectum may simulate hemorrhoids.

These tumors may be either cauterized or excised with good results.

[E. H. R.]

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THE HARVARD MEDICAL SCHOOL DORMITORY.

A very important meeting of the Harvard Medical School Alumni Association was held on June 20, 1923. The object was to consider the report of the Temporary Dormitory Committee, and it was very encouraging that the attendance at this particular annual meeting was over twice that at any other similar occasion.

The report of the Temporary Dormitory Committee was as follows:

1. *The need for a Medical School Dormitory* is a real one. It is appreciated by everyone in contact with the School, from the President of the University down to the youngest medical undergraduate. It has become apparent that the present is as good a time as any to start an active campaign.

The demand for a dormitory by the students at present enrolled in the Medical School is indicated by the following results of a questionnaire recently sent to all students. Two hundred and forty-one students, or 67 per cent. of those answering the questionnaire, have expressed themselves as being prepared to take rooms at once, assuming that the dormitory would be ready in September, 1923, and 92 per cent. were in favor

of a dormitory, even though many of them would not take rooms.

At the present time 254 men (or 71 per cent.) are paying for their rooms; 161 (or 45 per cent.) in a lodging house and 93 (or 26 per cent.) as one of a group of other students. Only 19 per cent. live at home; although in addition 4 per cent. are married and live, presumably, in a small apartment. Five per cent. are employed, most of them in a hospital, where they get their room for nothing.

As to the price paid for rooms. One hundred and sixty-one men live in a lodging house, where 87 per cent. of them pay not over \$200 a school year for their room. Of the remaining 13 per cent., 9 per cent. pay not over \$250, and only 4 per cent. pay as high as \$300.

Ninety-three men live as one of a group of students. The figures here are, on the whole, lower, although a few more men pay high rents. In this group 83 per cent. of the men pay \$200 or less, but of the other 17 per cent. who pay \$250 or over, 9 per cent. pay over \$300.

2. *The ideal site* is the northwestern corner of the junction of Pasteur and Longwood Avenues at the point where the southern extremity of Pasteur Avenue opens out to form a semi-circle. The land here is owned by the Ebenezer Francis estate, and negotiations for its lease or purchase have been begun. For a proper dormitory at least 75,000 square feet of land are needed.

3. *The probable cost of the Dormitory.* Mr. Charles A. Coolidge has in the past shown great interest in a Medical School Dormitory. In 1912 provisional plans drawn up by him were outlined in an article in the *Harvard Alumni Bulletin*, and this same article was quoted by Dr. J. Collins Warren, who wrote on "The Social Side of Student Life" in the *BOSTON MEDICAL AND SURGICAL JOURNAL* for June 13, 1912.

Mr. Coolidge has recently advised your committee that a dormitory containing 200 rooms to accommodate 225 students, together with a large assembly hall which will seat over 500 persons, and which can also be used as a dining-hall, and which will be connected with appropriate kitchens, serving rooms, and store rooms, will cost in round numbers about \$800,000, exclusive of the purchase price of the land. In case four squash courts or a gymnasium are provided, the additional cost will not be great.

4. *The method of raising this money* has been considered in all its aspects, for the problem is a very important one. The committee feels very strongly that it is the entire body of the Harvard Medical Alumni who should assume the responsibility of providing a building which fulfills such a real need in the medical community, a building which will be used day and night by all sorts of men connected with the School, and a building which more than any other will be

always associated in the minds of future graduates with the pleasantest episodes of their medical course. Each and every Medical School graduate must understand and appreciate his own personal responsibility; he must be willing to look backward to his own medical undergraduate days and then look forward to the benefits which will accrue to his successors, and he must be ready to help. There are at present nearly four thousand men who have attended the Harvard Medical School. If each of these men would give or collect from his friends or patients a sum of \$225, a total of \$800,000 would be raised.

There is some hope that the new School of Public Health, which has no graduates of its own but whose students will be given the privileges of the Dormitory, may be able to aid the cause.

The need for the Dormitory and the fact that the building will be erected for practical and daily use will undoubtedly attract several large gifts from grateful patients or from patrons of medicine in general. The assembly hall and other of the rooms offer opportunities for memorials of every type. It has been suggested to the committee that certain rooms, if not certain sections of the building, might be contributed by groups of individuals as, for example, by those living in a certain city or town away from Boston, with the idea that these rooms or sections should be occupied by students coming from that town.

5. *The recommendations of this committee are as follows:*

First.—That a dormitory, which will accommodate at least 250 men and will include a large dining and assembly hall, be built as soon as possible, and that ample provisions for future enlargement be made.

Second.—That the Harvard Medical Alumni Association assume the duty and the responsibility of securing this dormitory.

Third.—That to this end, a permanent Dormitory Committee, which will represent the Medical Alumni Association, be appointed to carry on this work; this committee to continue in office until the dormitory is completed, furnished, and accepted as a gift by the President and Fellows of Harvard College.

This report was adopted when the motion of Dr. W. P. Bowers that "The Chair appoint a Permanent Committee to take charge of the matter of a Dormitory for Students at the Harvard Medical School and to see that the recommendations of the Temporary Dormitory Committee are carried out" was carried unanimously.

Backed by the authority of this unanimous vote, the President, Dr. Joslin, has appointed 41 members to the Harvard Medical School Dor-

mitory Fund Committee. These 41 members are the following:

Dr. J. Dellinger Barney	Dr. Daniel F. Jones
Dr. John W. Bartol	Dr. Elliott P. Joslin
Dr. John M. Birnie	Dr. Roger I. Lee
Dr. Walter P. Bowers	Dr. Edwin A. Locke
Dr. John Lewis Bremer	Dr. Robert W. Lovett
Dr. Thomas J. Burrage	Dr. James H. Means
Dr. David Cheever	Dr. William R. Ohler
Dr. Henry A. Christian	Dr. Francis W. Peabody
Dr. Harvey Cushing	Dr. William C. Quinby
Dr. Elliott C. Cutler	Dr. William L. Richardson
Dr. George P. Denny	Dr. Milton J. Rosenau
Dr. Marshal Fabian	Dr. George G. Sears
Dr. Michael F. Fallon	Dr. Frederick C. Shattuck
Dr. Maurice Fremont-Smith	Dr. James S. Stone
Dr. Channing Frothingham	Dr. John B. Swift
Dr. Homer Gage	Dr. Philemon E. Truesdale
Dr. James L. Gamble	Dr. J. Collins Warren
Dr. Joseph Garland	Dr. James C. White
Dr. Alan Gregg	Dr. Nathaniel K. Wood
	Dr. Samuel B. Woodward
	Dr. Alfred Worcester

Dr. Francis M. Rackemann, General Secretary

The Committee is to be congratulated on having enlisted the keen interest of Mr. Phillips Kethum, Harvard A.B. '06, Harvard LL.B. '08, a partner of the law firm of Herrick, Smith, Donald & Farley, who without financial compensation of any kind is giving freely of his time and attention, with the result that legal matters of every sort in connection with the work are being handled properly.

The work is going forward rapidly. An opportunity to buy the land at the corner of Longwood and Pasteur Avenues has been secured. The architect, Mr. Charles A. Coolidge, has already submitted preliminary plans of a building, and a sketch will be available for publication in the near future. Mr. Coolidge has been asked to plan a dormitory which will house at least 250 students, giving them accommodations of these three varieties: 1, single rooms large enough to hold a desk as well as a bed; 2, double rooms, each for two men; and, 3, suites of two small bedrooms with a common study and a private bath. The dormitory is to have a large hall, where three meals a day can be served to at least 250 men, and which with the tables removed will provide a much-needed auditorium, holding 600 persons on camp chairs.

This last clause needs further comment. At the present time there is no large assembly hall or auditorium in or near the buildings of the Medical School. It was unfortunate that more of the meetings of the American Medical Association in 1922 could not have been held there. When any widely known and celebrated doctor or scientist visits the School, there is no satisfactory place to receive him, and as the largest of the present lecture rooms holds only about 200 persons, overcrowding and discomfort to everyone is apparent, and need for a room more than twice as big is plainly evident.

In addition to the assembly hall, there will be

a good-sized living room with a large open fireplace and a piano.

All this will cost money. The land alone will cost about \$100,000 and the building will cost at least \$800,000. The committee feels strongly that the cause is so appealing and the interest so widespread that this money will be raised without very great difficulty. Already the names of the Harvard Medical School graduates throughout the world have been grouped geographically, and one man in each group has been asked to act as district chairman, to get into direct communication with not over 20 men in his neighborhood, in order to encourage each individual to contribute what he can for himself, and having done this to try hard to interest his friends, and perhaps his patients, so that his personal efforts will produce a sum, which for the 4000 men who have attended the School, will average something over \$225 apiece.

The committee is well aware that many men, in spite of considerable effort and sacrifice, will not be able to give or collect anything like this sum, but hopes that each man will give something, and thereby show his approval of the dormitory project. On the other hand, other men will be able to give \$225 from their own pocket without any trouble, and it is important that these men remember that it is their subscriptions and their collections which will bring the average of all up to the sum of \$200.

The launching of this campaign justifies us in looking forward with confidence to the time, now happily not far distant, when the cheap lodging house and the malodorous restaurant will be incidents of the past in the curriculum of medical students. To accomplish this end, however, a universal and whole-hearted coöperation on the part of the graduates of the School will be necessary. Each should be willing to give to the limit of his capacity, and, furthermore, should make every effort to tap the sources of philanthropy which are available to him.

FUNCTIONS OF THE PUBLIC HEALTH SERVICE.

THE Public Health Service of the United States Government has recently issued a series of six short articles in answer to many inquiries it has had regarding the benefits of its service to the individual.

The Public Health Service works in the main in complete coöperation and accord with the state government, both in the capacity of adviser and helper. In addition, it has complete control over interstate health matters. Its duties, broadly speaking, are to prevent disease from entering the country from abroad and from spreading from one State to another, to suppress epidemics, investigate diseases, and dis-

seminate health information. On the whole, the United States Public Health Service finds out things, and the State and local health authorities apply them, although this system works to some degree reciprocally.

Among the problems that the Service has applied itself to are those of the prevention of ophthalmia neonatorum, proper birth registration over a large area of the country, the organization of child health work, the prevention of hookworm disease, the control of smallpox. In travel by rail and steamboat, drinking water supplies must be certified by the Service, and the travel of communicable disease patients is controlled. The work of the original Marine Hospital Service, established by Congress a century and a quarter ago, has been carried on, and medical advice is supplied to American ships at sea by radio.

Foreign quarantine has been established both abroad and at home, the various seacoast States having, one by one, surrendered their function in this particular to the national government. The duty of domestic quarantine, or the prevention of the spread of disease from State to State has devolved by law upon the Service. The spread of bubonic plague from its foci in California, Texas, and Louisiana, is being ceaselessly fought, and lately the control of typhus has become an important duty of the government.

Venereal disease has been attacked through an educational campaign and by the establishment of clinics and other control measures in conjunction with the States. There are now 542 such clinics in operation.

Malaria is still a serious problem in fourteen States, and in thirteen of these the control work is being carried on by the Public Health Service in conjunction with the State Health Departments and the International Health Board. The Public Health Service directs the work from a headquarters established at Memphis, Tenn.

A national home for lepers was provided for by Congress in 1917, and this home, established in Louisiana, is administered by the Public Health Service.

Water supplies have been studied for years by the Service, and much valuable information imparted, and many interstate and industrial health problems have been solved.

It has been found so far impossible to have a sanitary headquarters in each State, and in lieu of this the country has been divided into seven sanitary districts, each in charge of a sanitary engineer.

A LAY PUBLICITY CAMPAIGN.

THE *Illinois Medical Journal* reports that the minimum amount of money that will justify the inauguration of the lay publicity campaign in

Illinois has been obtained by the Council of the State Society and by the committee appointed to supervise the campaign as recommended last year by the House of Delegates of the State Society. The purpose of the plan is to benefit the public and do credit to the profession. It is explained that the funds on hand are pitifully insignificant as compared with the money spent by the various cults. One of these cults boasts of a fund amounting to \$150,000 to be devoted to "putting over" at the next session of the Legislature laws favorable to this especial form of practice.

It is hoped that "brains and experience of the keenest quality" may be secured in order to bring this campaign work up to the highest efficiency.

This subject has been discussed in a desultory way in Massachusetts, but no definite action has been taken.

There are dangers in the practice of the cults. Are we ready to assume the responsibility of teaching the people through a publicity campaign setting forth the established facts relating to preventive medicine, the advantages of surgery, and the scientific application of internal medicine? Voluntary news items relating to medicine in the daily papers, although often interesting, do not cover the whole field; they are usually of the spectacular type, setting forth new discoveries.

RURAL MEDICAL SERVICE.

THE Committee on Medical Service of the State and Provincial Health Authorities, under the chairmanship of Dr. Matthias Nicoll, Jr., has recently published its report in the *American Journal of Public Health* (xiii, 638, 1923).

A circular letter was sent by the Committee to all the state health officers requesting information concerning the rural districts: (1) in general, as to the adequacy of medical service in such districts; (2) the proportion of inhabitants to the practitioners available; (3) the average age of the practitioners, and (4) the increase or decrease in the number of practitioners during recent years.

Thirty-six of the forty-eight States replied, and, in general, the reports are disquieting, indicating a marked inadequacy in the numbers of practitioners available in the country districts, a lack of younger men entering such districts to practice, and an actual falling off in the numbers. Only five States seemed to be satisfied with the condition of affairs.

Kansas reports that in a list of 12 counties with 20 doctors, but one is a recent graduate.

In Kentucky the majority of physicians in rural counties are at or past middle age.

In one county in Louisiana the ratio of physi-

cians to population is 1 to 1385, and but one physician in this county has been in practice less than 10 years. Many other examples are cited.

A recent bill introduced in the New York Legislature provides for appropriations for public health work by counties which do not contain any first or second class cities, such work to include the establishment of hospitals, clinics, the services of a public health nurse, and, presumably, subsidizing local physicians.

The report indicates that the unit for public health work should be the county, and that the most immediate necessity is to provide throughout the rural districts for the establishment of smaller or larger open hospitals, a very great extension of public health nursing service, and in places where physicians are not available provision for visiting and bedside nursing service in local communities.



NARCOTIC CONTROL BY THE LEAGUE OF NATIONS.

THE League of Nations, through the Advisory Commission in Traffic in Opium, has definitely taken over the task of attempting the control of dangerous drugs. Four meetings have been held, available data have been gathered, and an administrative plan is being completed—according to Gertrude Seymour in *The Nation's Health* (v, 7, 1923).

A questionnaire was issued in 1922 seeking information on raw opium, prepared opium, medicinal opium, morphin and cocaine; relations with China; and other matters. For the first time, in the replies to this questionnaire, are assembled comprehensive data referable to the extent of the problem.

The governments represented on the committee are the British Empire, China, France, Germany, India, Japan, Netherlands, Portugal, Spain, and the United States. The Serb-Croat-Slovene State has been invited to send a representative, but has not yet done so.

One of the greatest stumbling-blocks that the Second Assembly of 1921 had to surmount was the definition of a legitimate purpose in the use of these drugs, for special conditions in India, where opium is a common household remedy, and where a majority of the population has acquired a tolerance to its use, had to be met. The strictly medicinal use has been adopted as the legal standard. The need was mentioned of acquainting doctors generally with the less harmful drugs which might be used as substitutes for morphin.

Close coöperation between the various countries signatory to the agreement—of which there

were twenty at the end of last April—will be the factor of importance in establishing control and checking the abuse of these drugs. With this co-operation smuggling can be best detected, and by the governmental issuance of import certificates the movement of opium between countries can be subjected to greater oversight.

Perhaps in time, even in this country, the burden of narcotic control will be lifted from the shoulders of the physicians, and they will be relieved of this extra and unwarranted tax on the discharge of their professional obligations.

THE NEW TUBERCULOSIS ANTIGEN.

So far, apparently, the chief reports concerning Professor Dreyer's new antigen for tuberculosis, prepared by ridding the bacillus of its waxy envelope, have appeared only in the lay press. The *London Medical Press and Circular*, as quoted by the *Journal of the American Medical Association* (81: 499, 1923), comments on this fact and expresses the opinion that the reports are, to say the least, premature.

The question is also raised as to how it was that a technical scientific lecture, delivered at a metropolitan hospital, should have been so soon and so accurately reported. It is not the first time that the lay press has been allowed to "scoop" the medical press. It again brings us up against the fact that technical discoveries of general value should be carefully substantiated and allowed to mellow under the criticism that arises from medical publicity before being disseminated as general information. Discoveries of worth have been condemned before this because allowed to circulate with facts half known. The admirable way in which insulin publicity has been handled should reveal the proper road for public information.

The fat-free antigen may be a discovery of note, but information is not yet available through which we may judge it on its merits.

NATIONAL CONFERENCE OF TUBERCULOSIS SECRETARIES.

FOR several years the relationships between the secretaries of the local tuberculosis associations, the secretaries of the state tuberculosis associations and the National Tuberculosis Association have been somewhat complicated. A conference of secretaries and representatives of affiliated organizations has been held; there has been a conference of the local and state executives, and there has been a meeting of the state executives held jointly with the staff of the National Tuberculosis Association. These different groups have made it rather difficult to maintain

the proper co-operative relationships between the various local, state, and national organizations, and over a year ago a special committee, representing the secretaries and the Board of Directors of the National Tuberculosis Association, was appointed to simplify this procedure. This has been admirably carried out by a committee consisting of Dr. James Alexander Miller, Dr. David R. Lyman, Dr. Charles J. Hatfield, Dr. Robert G. Paterson, Mr. Ernest D. Easton, Mr. James P. Faulkner, Mrs. B. B. Buchanan, Mr. James Minnick, and Mr. Dwight E. Breed.

On Thursday evening, June 21, at the annual meeting of the National Conference of Tuberculosis Secretaries, the constitution was amended. It will be noted that the new constitution provides that there shall be an executive committee of three members representing the state tuberculosis associations, three members representing the local tuberculosis associations, and one member of the executive staff of the National Tuberculosis Association. When the Managing Director of the National Association was advised that the constitution had been adopted by the secretaries, he promptly nominated Mr. Frederick D. Hopkins, Administrative Secretary of the National Tuberculosis Association, to represent the executive staff of the Association on this newly appointed executive committee. Following the appointment of the representatives of the state and local associations by the President of the reorganized Association, a meeting of the executive committee was held on Friday, June 22, in order to carry out the purposes of the constitution.—*Bulletin of the National Tuberculosis Association*.

PHYSIOLOGICAL EFFECTS OF HIGH TEMPERATURES AND HUMIDITIES WITH AND WITHOUT AIR MOVEMENT.

A REPORT of investigations conducted in mines on the effects of high temperature and humidity has been published in the United States Public Health Service Report of July 20, by R. R. Sayers, Surgeon of the Public Health Service, and D. Harrington, Supervising Mining Engineer of the Bureau of Mines.

In 1921 an extended study was made in hot and deep metal mines of the effect on body temperature and pulse rate of subjects in still and moving air, at temperatures ranging from 90° to 100° F., and of 100 per cent. relative humidity. Blood pressure, pulse rate, rectal temperature, and symptoms of dizziness, headache, weakness, perspiration, etc., were recorded. Tests were made about 2700 feet below the surface.

Between the temperatures of 90° and 98° F., the ill effects upon man of almost saturated air were found to be much less when the air was moving than when it was still. The work that

could be done was also found to be greater in moving than in still air.

At degrees of temperature from 98.6° to 100° F., no beneficial effects were found by moving the saturated air, and even some apparent disadvantage was noted.



WHAT IS THE HUMAN BODY WORTH? WORKMEN'S STATE COMPENSATION LAWS SHOW WIDE DISAGREEMENTS.

Posted in many thousand factories and workshops throughout the United States are notices, telling employees that they are protected by the provisions of their various state compensation laws. Lest any should not see and understand them, these notices often are printed in several languages. Yet in different States, there are various legal and medical interpretations of the forty-two workmen's compensation laws now in force, the laws themselves having taken on widely different meanings in questions of personal injury and other accidents.

In an effort to call attention to these disagreements, which are constantly being brought before the State Legislatures and Courts, the National Industrial Conference Board, of 10 East 39th Street, New York, has just completed an exhaustive report on the medical phase of workmen's compensation acts in the United States. The Conference Board, in its task of preparing this report, received the active co-operation of the Conference Board of Physicians in Industry, of which United States Senator Copeland of New York is an active member.

Every workmen's compensation case is a medical case, either actively or potentially. The Board points out that time must be lost from work because of injury to entitle a worker to compensation, and this presupposes medical attention in practically all cases. The medical problem is one of the first to be encountered and one of the most important to settle in a manner satisfactory to all. At present there is so much conflict among the different States' administrative laws, and such a lack of facilities for collecting the information on this question, that the report was undertaken by the National Industrial Conference Board as a new contribution to this vital American problem.

Records of thousands of personal injury awards have been studied by the medical authorities in reaching their conclusions, and some surprising facts were brought out by the inquiry. Identical injuries are compensable in widely varying amounts in various States, and there is a similar inequality in the courts' interpretation of identical sections of the various laws. What is needed most in the administration of the workmen's compensation laws, in the opinion of the Board's experts, is greater consideration of the opinion of medical men in the

administration of the laws and more uniform opinions among those concerned with their administration.

In several States, legislatures have failed to appropriate sufficient funds to permit any extended analysis of the records accumulated in the laws' administration. For this reason, most of the improvements and amendments have been brought about by legislative intent rather than past experience.

The only States which have no workmen's compensation laws are Arkansas, Florida, Mississippi, Missouri, and North and South Carolina. The experiences of the other 42 States have now been sufficiently extended, in the opinion of the National Industrial Conference Board and its research staff, to render the record of the physician's part in workmen's compensation laws worthy of being permanent.

Physicians and insurance company executives have shown great interest in the work, and many inquiries have been received for advance information as to its contents. Many important national industrial organizations are affiliated with the Conference Board, and as a result the recommendations embodied in the report, it is believed, will be brought to the attention of the various state legislatures.

There is an increasing tendency to give due consideration to the value of adequate medical treatment in the administration of the laws. Early in their administration, the doctor's part received scant attention. In some States, even for the most serious injuries, only two weeks' medical treatment could be legally provided. "A period of experience has now elapsed," says the report, "sufficient to enable those who make the laws and those who administer them to obtain a better view of the problem. Such experience has shown the advisability of greatly increasing both the time and amount of medical service rendered, until at this time in 20 States such service may be unlimited."

The report shows that employers, for failure to report accidents to their men, may be fined various amounts, ranging from \$10 in California, Delaware and Illinois, to a year's hard labor in Alabama or \$2500 in West Virginia.

The term "medical service" receives widely different interpretations in various States. Ohio and Connecticut have freed employers from liability when injured workmen took their troubles to quacks, masseuses, and "doctors of medical electricity." Similarly the California State Commission refused to reimburse a worker who consulted a Chinese herb doctor. Iowa and Connecticut do not regard osteopaths as qualified to act in compensation cases, while California permits them. In Wisconsin Christian Science treatment may be resorted to by an injured worker with his employer's consent. There a death from a bruised shinbone infec-

tion which was treated by prayer was held compensable. However, a Boston Elevated Railway employee who presented a \$14 bill for services by a Christian Science practitioner lost his claim.

One result of many of the laws has been to break down the universally accepted principle of privileged communication between doctor and patient. In many States physicians can be compelled to testify as to their treatment.

States differ in the laws' rulings on various surgical operations. For instance, the hand extends to the elbow in the legal opinion of Alabama, Connecticut, Delaware, Kansas, Nebraska, New York, and other States, while it extends only to the wrist in Colorado, Idaho, and Montana. The human foot in Colorado extends only to the ankle, but in Alabama it extends to the knee. New York takes a middle ground, merely qualifying it as some place "between the knee and the ankle." A Pennsylvania worker lost the power to walk easily with one foot and received compensation, while in Minnesota the Supreme Court refused to affirm a similar award because "the foot was still there," but authorized partial compensation.

Various state courts and commissions have answered in various ways the question, "What is the human body worth?" For example, a thumb is worth \$225 in Wyoming, \$600 in Oregon, and in New York and Alabama the legal compensation for 60 weeks. Wyoming holds a human hand worth \$1000, while its value rises to \$1600 in Washington, \$1900 in Oregon, and 244 weeks' compensation in New York, and it is worth 104 weeks' compensation in Colorado. Similar variations in legal value occur with reference to the loss of an eye, a toe, a foot and fingers.

New York holds that when a worker is injured so that only his good looks are impaired, he may collect from his employer owing to the humiliation entailed. In New York and Michigan compensation was awarded when horses bit off ears of workers, but in New York the award was based on the common law. One worker collected in New York because he was unable to replace his lost eye with one of glass, and a drooping eyelid which made the injured person appear to be winking at whatever he observed, resulted in another award. Another New York workman, whose nose was bitten off by a horse, received \$2500 from the compensation board. Deafness has been valued at \$3000 in Oklahoma, and deafness in one ear at \$1500. In Washington loss of hearing is only compensable at \$1900 and of one ear's deafness at \$500.

Pennsylvania has held in the case of an automatic lunch-counter attendant, that heat prostration at work, causing death, was an accident, while in Connecticut frostbite was similarly

judged. In New York, however, the courts held that a sunstruck brewery wagon driver was not entitled to compensation. Pennsylvania authorities showed regard for the injured worker in the case of a dog-eatcher in New Castle, who was bitten by one of his captives and died of hydrophobia. His estate received compensation.

Persons bitten by insects, when spotted fever has resulted, are not entitled to damages in the opinion of the Idaho Industrial Accident Board. However, New Jersey authorities held that a chef pinched by a lobster was entitled to five weeks' disability award for infection. In California, on the other hand, a farm hand bitten on the leg by a spider failed to get damages. The same commission, however, reversed this ruling in the case of a sailor whom a spider bit, holding that spiders had no business aboard ship and that the ship's owner was liable. Poison ivy injuries have been held compensable in New York and Massachusetts, but a municipal laborer in San Francisco was denied an award for poison oak injuries.

One of the sharpest controversies among compensation boards is over the proper valuation of the impairment of sight. Various tables and tests have been evolved, but they display wide discrepancies. They agree, in fact, only on one item: What constitutes normal vision?

Montana, Idaho, Utah, and Wisconsin allow 20 weeks' more compensation for the removal of an eye than for blindness in one eye without removal. Pennsylvania, however, holds that where there is blindness the removal of the eye makes no difference, and allows nothing additional.

One of the most important phases of the report is that which shows the widely varying amounts expended for medical treatment under the awards of various States. For instance, Wyoming in one year allowed only 3.6 per cent. of the total awards for medical expense, while the percentage in Connecticut for two years was 38.2, totaling \$1,663,107.08, and in Massachusetts, where industrialism has reached one of the highest points of development, the percentage was 20.8 with medical expenses of \$1,602,057.74.

In only one State, New Mexico, is there a provision for the physical examination of workers before an injury occurs.

Summing up its investigations, the report shows that both interested parties to compensation laws, the workers and the employers, have accepted as just the principle that one group should be charged with major responsibility for injuries suffered by another group. Differences which have appeared are not of sufficient importance to cast doubt on the value of the work as a whole, the report concludes.

Miscellany.

APPOINTMENTS AND NOMINATIONS.

ON August 16, Governor Cox reappointed Frank S. Atwood of Salem as medical examiner for the Tenth Essex district, and James E. Simpson as associate in the same district. He nominated Edwin C. Gilbert of Springfield as trustee of the Belchertown State Hospital, and James L. Harrop as a trustee to succeed Henry B. Dean of the same hospital. Harry O. Spaulding of Wellesley was nominated as a trustee of the Massachusetts Homeopathic Hospital.

THE HISTORY OF THE MASSACHUSETTS MEDICAL SOCIETY.

It should be recognized that the principal reason for buying this volume lies in the advantage of knowing the important facts relating to the past history of the Society. As a rule, physicians place a greater value on a knowledge of history than does Henry Ford. For varying reasons over four thousand doctors have joined the Society. Those who were ambitious to unite with their fellows in promoting the usefulness of the Society will be inclined to subscribe, if financially able, but in the busy affairs of life good intentions if not immediately put into action may be forgotten. Although we should be pleased with this opportunity to show our appreciation of the work of Dr. Burrage, we should also be led to subscribe for this volume because of its definite value. The earlier that this matter is attended to, Dr. Burrage and his associates will be relieved of the uncertainty of financial obligations. Send your check to Mr. Ballard, Boston Medical Library, now.

UNITED STATES PUBLIC HEALTH SERVICE ADVISES TREATMENT OF IVY POISONING.

THE treatment of ivy poisoning is simple and easily administered. One of the best treatments is bathing with salt water. Sea water is best if it is available. Another good application consists of one teaspoonful of boric acid in a quart of hot water. The affected parts should be bathed with warm water every day or every two days and carefully dried without rubbing. Bathing should be followed by another application of boric acid. The attack may subside in from four to six days. The best advice to vacationists is, study the poison oak, the poison ivy, and the poison sumac, that you may distinguish these plants from their neighbors. Once you are able to recognize them you can scrupulously avoid them. Avoid the creeper with the three divided leaves. Avoid the small shrub with the

broad leaves like the oak. Give the sumac that grows in swampy places a wide berth. Persons who have suffered from plant poisoning do not soon forget the experience.

A SUGGESTION WHICH MIGHT BE OF USE IN BOSTON.

THE following appeared on the front page of the London *Times* for July 23, 1923:
"Don't forget to pay your doctor before you go on your holiday. He may want a holiday too.—G. P. Sufferer."

News Items.

REMOVAL.—Dr. Sidney Lord has removed his Boston office to 224 Commonwealth Avenue.

WILLIAM J. MACDONALD, M.D., has removed his office to the Professional Building, 270 Commonwealth Avenue, Boston, Mass.

BEVERLY HOSPITAL.—A demonstration clinical meeting was held at the Beverly Hospital, Tuesday, August 21, at 4 P.M. Interesting cases were shown, and discussion followed.

THE VENERABLE LONDON LANCET.—The London *Lancet* will complete the hundredth year of its existence in October. A dinner is to be held in London in celebration of the event.

INFLUENZA AMONG THE ESKIMOS.—It is reported that an epidemic of influenza last year caused such a mortality among the Eskimos of the Cape York region of northwest Greenland that it is now impossible to use that section as a base for an exploring expedition.

SMALLPOX IN NEW YORK CITY.—Between the first of January and the first of August eleven cases of smallpox were discovered in New York City. All had the disease in a mild form; all of the patients were colored; none of them had ever been successfully vaccinated.

This is but another reminder to us that the struggle to keep compulsory vaccination on our statute books must be unremitting, for our opponents continue to be more active and better organized than ourselves.

INSULIN IN AUSTRALIA.—The Commonwealth of Australia Serum Laboratories have taken over the manufacture of insulin for the treatment of diabetes in Australia and New Zealand, under an arrangement with the University of Toronto. Physicians accepting these supplies must enter into a signed agreement with the Commonwealth to use the product under certain restrictions and supply the Director of the Laboratories with monthly reports of the cases treated.

DIABETIC COLUMN.

INSULIN SERVES TO SHORTEN THE HOSPITAL STAY OF DIABETIC PATIENTS.

THE following chart illustrates rapid dietary adjustment with a reduction in the initial insulin dose.

The patient received one unit of insulin before her first meal in the hospital, two before the second, and so on until she was having five units three times a day. At the same time her diet was changed daily, following the schedule

of Insulin Diabetic Diets given below. When she became sugar free on T. D. 4, which contains 34 gm. carbohydrate, she skipped the intervening diets and received diet C₄PF₄. From this time on her diet was increased daily, the increases being made only in the protein and fat foods after July 17. At this time her insulin dose was gradually decreased by cutting down first the noon dose and then the evening dose. Thus she was discharged taking only one dose daily of five units. It is probable that under her local physician's care, she can gradually reduce that dose and possibly give up insulin entirely.

H. F. Root.

MRS. H.—NEW ENGLAND DEACONESS HOSPITAL									
DATE July 1923	URINE Diac Acid % Sugar	Orders	DIET			Cals.	BLOOD SUGAR	INSULIN Units	Time
			Carb.	Prot.	Fat				
11	0	6.0	T.D.No.2	67	25	29	629	1	12.30
12	0	1.3	T.D.No.3	66	24	37	693	2	4.30
							.19	3	7.30
								4	11.30
								5	4.30
13	0	0	T.D.No.4	34	15	30	466	5	7.30
								5	11.30
								5	4.30
14	0	0	C ₄ PF ₄	43	30	51	751	5	7.30
								5	11.30
15	0	0	C ₅ PF ₅	52	32	66	930	5	4.30
								5	7.30
								5	11.30
16	0	0	C ₆ PF ₆	64	44	83	1179	5	4.30
							.13	5	7.30
								5	11.30
17	0	0	C ₇ PF ₇	74	60	93	1373	5	4.30
								5	7.30
								2	11.30
18	tr.	0	PF ₉	76	62	105	1497	5	7.30
								0	4.30
19	0	0	PF ₁₀	76	57	118	1594	5	7.30
								0	4.30
20	0	0		73	59	131	1707	5	7.30
								0	
								0	

INSULIN DIABETIC DIETS

Diets	Total Diet				Carbohydrate (C)				Protein and Fat (PF)						
	Carbo-hy-dr ate	Pro-te-in	Fat	Calo-ries	5% Vege-tables	Orange	Oat-meal	Shredded Wheat	U-nits	Po-tato	Egg	Cream	20% fat	Ba-But-ter	Meat
T.D.1															1
T.D.2	181	46	44	1304	300	300	....	3	4	240	3	120	...	...	2
T.D.3	101	35	43	931	300	300	....	1	2	120	3	120	...	...	3
T.D.4	66	24	37	693	300	200	....	1/2	2	...	2	120	...	...	4
C1+C ₂ F1	42	29	52	752	600	200	15	....	....	2	60	30	30	30	5
C2+C ₃ F2	52	32	66	930	600	200	30	....	....	2	120	30	30	30	6
C3+C ₄ F3	14	15	30	386	300	100	....	....	....	2	60	15	15	15	2
C4+C ₅ F4	22	19	37	497	600	100	....	....	....	2	60	15	15	15	3
C5+C ₆ F5	32	24	37	557	600	200	....	....	....	2	60	30	15	15	4
C6+C ₇ F6	74	52	88	1296	600	300	30	....	....	2	120	30	30	30	7
C7+C ₈ F7	74	52	88	1296	600	300	30	....	....	2	120	30	30	30	8
C8+C ₉ F8	84	61	94	1426	600	300	30	1/2	2	...	2	180	30	30	90
C9+C ₁₀ F9	98	65	106	1606	600	300	30	1	2	...	2	180	30	45	90
C10+C ₁₁ F10	109	66	119	1771	600	300	30	1	2	120	2	240	30	45	120
C11+C ₁₂ F11	135	80	135	2075	600	300	30	1	2	240	2	240	30	45	12
C12+C ₁₃ F12	159	84	135	2187											

STAFF MEETING.

Manuscripts, manuscripts, lying before us;
Some rude ones, some crude ones, some old ones
revamped;
Some that will startle us, some that will bore us;
Some that in dozens of sanctums have camped.

Some that are timid but heliotropic.
Seeking forever a steadfast light—
Truths half-revealing and truths half-concealing,
Showing a hint of a hidden might.

Some that have come from a legion of sources
With truths that are worn as the pebbles that lie,
Polished by sand and the tide's long courses,
And placed in a setting to catch the eye.

Remodelled, revamped, with a brand new dressing,
With varnish and polish and fine veneer,
And sent on their way with an author's blessing—
But Icarus' wings spell a brief career.

But some that are new ones and some that are true
ones
Forge us a lesson in words that are bold,
And courage returns when we know that a few ones
Still knock with a message that must be told.

JOG.

RECENT DEATH.

DR. EDWARD EVERETT ALLEN, secretary and assistant professor of anatomy at Boston University School of Medicine, a resident of Charlestown, was killed in an automobile accident between Sagamore and Plymouth, August 13, 1923.

He was 55 years of age, a graduate of the Charlestown schools and of the Boston University Medical class of 1896. Two years later he joined the Massachusetts Homoeopathic Medical Society.

He was senior warden and treasurer of St. John's Episcopal Church and was a member of Henry Price Lodge of Masons, Signet Chapter and Coeur de Lion Commandery, K. T.

He is survived by his widow, Mrs. Laura (Tilden) Allen, and a daughter, Miss Marion Allen, a teacher in the Boston schools. At the time of his death he was on the staff of the Massachusetts Homoeopathic Hospital.

NOTICES.

UNITED STATES CIVIL SERVICE EXAMINATION.

The United States Civil Service Commission announces an open competitive examination for Junior Medical Officer.

Applications will be received until December 28. The examination is to fill vacancies in the Indian Service, at entrance salaries ranging from \$1000 to \$1200 a year, plus the increase of \$20 a month granted by Congress, and quarters, heat, and light; in the Coast and Geodetic Survey, at an entrance salary of \$1020 a year, plus the increase of \$20 a month, and an allowance of \$1 a day for subsistence while serving on board ship, except in the Philippines, where the allowance is \$2.50 a day; and in the Panama Canal Service, at an entrance salary of \$250 a month.

Applicants must have been graduated from a medical school of recognized standing; or be senior students in such institution and furnish proof of graduation within six months from the date of making oath to the application.

Competitors will not be required to report for examination, but will be rated on their education, training and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of United States civil service examiners at the postoffice or custom house in any city.

DISEASES REPORTED TO THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

WEEK ENDING AUGUST 4, 1923.

Disease.	No. of Cases.	Disease.	No. of Cases.
Anterior poliomyelitis	3	Pneumonia, lobar	20
Chicken-pox	41	Scarlet fever	83
Diphtheria	118	Septic sore throat	1
Dog-bite	11	Suppurative conjunc-	
Encephalitis lethar-		tivitis	7
gica	2	Syphilis	35
German measles	4	Tetanus	1
Gonorrhea	121	Tuberculosis, pulmo-	
Malaria	1	nary	118
Measles	111	Tuberculosis, other	
Mumps	38	forms	15
Ophthalmia neonato-		Typhoid fever	13
rum	16	Whooping-cough	104

DISEASES REPORTED TO THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

WEEK ENDING AUGUST 11, 1923.

Disease.	No. of Cases.	Disease.	No. of Cases.
Anterior poliomyelitis	2	Pellagra	1
Chicken-pox	24	Pneumonia, lobar	10
Diphtheria	106	Scarlet fever	63
Dog-bite	3	Septic sore throat	1
Encephalitis lethar-		Suppurative conjunc-	
gica	3	tivitis	7
Epidemic cerebrospi-		Syphilis	40
nal meningitis	3	Tuberculosis, pulmo-	
German measles	2	nary	92
Gonorrhea	93	Tuberculosis, other	
Influenza	2	forms	10
Malaria	1	Typhoid fever	15
Measles	69	Whooping-cough	78
Mumps	18		
Ophthalmia neonato-			
rum	12		

SOCIETY MEETINGS.

DISTRICT SOCIETIES.

September, 1923.—Meeting of Franklin and Hampshire District Medical Societies at South Deerfield.

Essex North—Combined Meeting with Middlesex North, Middlesex East and Essex South in October. Semi-annual Meeting at Haverhill, January 2, 1924. Annual Meeting at Lawrence, May 7, 1924.

STATE, INTERSTATE AND NATIONAL SOCIETIES.

September 12, 1923.—New England Tuberculosis Conference at Worcester.

September 13, 1923.—Celebration of twenty-fifth anniversary of the Rutland State Sanatorium at Rutland.

October, 1923.—Boston Health Show will be held in Boston October 6-13, inclusive.

October, 1923.—Meeting of the American Health Association will be held in Boston, October 8-13, inclusive.

October 18-19, 1923.—Annual Meeting of New England Surgical Society in Boston.

For list of Officers of the Massachusetts Medical Society, see page vii of the Advertising Section.